

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Referral Patterns After a Seizure Admission in an English Region: An Opportunity For Effective Intervention? An Observational Study of Routine Hospital Data
AUTHORS	Grainger, Ruth; Pearson, Michael; Dixon, Peter; Devonport, Elizabeth; Timoney, Michelle; Bodger, Keith; Kirkham, Jamie; Marson, Anthony

VERSION 1 - REVIEW

REVIEWER	Rhys Thomas Cardiff University, UK University Hospital of Wales, Cardiff, UK
REVIEW RETURNED	24-Oct-2015

GENERAL COMMENTS	<p>This is an important paper that should find its way to the desks of all those who commission services.</p> <p>Major Points</p> <p>The study hypothesises that neurologists are the only group actively following up people with epilepsy. This may be true in the study area. Elsewhere in the UK geriatricians, clinical pharmacologists, psychiatrists, paediatricians (often beyond the age of 18), neurosurgeons (in glioma clinics), general medics, and general practitioners adequately follow up people with epilepsy.</p> <p>It also relies upon people who attend A&E being from the local area - and not those traveling and making medication errors.</p> <p>Was there a correction made for multiple comparisons?</p> <p>The low referral patterns may still represent localised poor resources or a regional practice difference rather than an NHS wide issue.</p> <p>Minor Points</p> <p>The phraseology of the first line (page 3) jars somewhat - I think the term "lead relatively normal lives" is imperfect and yet I understand why the authors have chosen not to state 'normal lives'. I recommend rewriting this to convey the intended meaning: 70% are seizure free with or without medication and that a better quality of life is associated with seizure freedom.</p> <p>I'm not sure that "attack" (line18, page 3) is appropriate when seizure is meant.</p>
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	<p>Page 3, line 24 - more than twice as likely compared to the mean?</p> <p>Page 4, line 30 - I think the authors may mean sex (biological) rather than gender (their societal representation) - same in table1, table2</p> <p>The type setting of table 4 could be improved. "agegroup" needs a space - ODDS RATIO need not be capitalised. CI for confidence interval needs spelling out.</p> <p>Page 9, line 49 "s that might have presented as seizure" sounds awkward - patients present with a seizure and conditions may mimic seizures. I am not sure how cancer, or alcoholism per se may masquerade as epilepsy.</p> <p>Page 10, line 7 - I am sorry but I did not follow which two particular adjectives were important; bed and day?</p> <p>Typographic errors Page 2, line 34 "The NASH audit showed that care people" should read "The NASH audit showed that the care of people"</p> <p>Page 2 line 35 a "(ref)" remains where the authors would have wanted to place a reference</p> <p>Page 3, line 16 "(48 %)" should be "(48%)" Page 3, line 51 "likely to the prime reason" should be "likely to be the prime reason"</p> <p>Page 4, line 16 "online appendix or available from authors." is "online appendix and available from authors."</p> <p>Page 4, line 30 - is the "Clarkson scale (8)" the Charlson index?</p> <p>Page 4, line 31 - "whether they had had a clinic in prior year" could be "whether they had had a clinic appointment in the previous year" and further in this long sentence using a few more definite articles would help the reader</p>
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REVIEWER	Colin P Doherty Trinity College Dublin, Ireland
	My work was referenced in the article
REVIEW RETURNED	25-Oct-2015

GENERAL COMMENTS	<p>This is an important addition to the literature on the variability of acute care, not just in a neurological illness, but across the spectrum of medical and surgical presentations: What we are witnessing is the appropriate use of big data and focused audit to uncover a well established culture of episodic and highly variable care in chronic conditions without the joined up thinking that would inform ways to reduce the reliance on the ED and hospital admissions. The potential for savings in this study are large enough but imaging if all acute exacerbating of chronic conditions could deliver the same?</p> <p>I would suggest only one change: on page 3 lines 18-21... Starting with the words ' perhaps because by the time GPs..., this is a discursive point better suited to the discussion. It jumps to a</p>
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	conclusion on the data in the introduction that is not addressed in the discussion or conclusion: it's an interesting point but best excised from the introduction and if not dealt with further, best left out altogether.
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VERSION 1 – AUTHOR RESPONSE

Firstly we have strong anecdotal evidence that few non neurologists are following up epilepsy routinely and we know that they are not attending epilepsy meetings (ILAE, ABN etc) where most neurologists will be getting updates etc. As a quick check, we looked to see how many patients had had an appointment (anywhere for any condition) in the three months post seizure. The total seen rises from 25.5% to 46.2% but this includes many specialties that would not tackle epilepsy. But even if we took this figure as indicating some degree of oversight, more than half of patients are not being follow up.

Secondly, the low referral pattern to neurology services was seen across the country in the separately recorded NASH paper without any obvious regional pattern. There are isolated areas of excellence (and your reviewer works in one such) but all regions of the country and indeed all 4 countries are affected.

The emergency admissions policy is to take people to the nearest hospital, the calculations to determine which is the nearest hospital to a person's residence are difficult due to defining routes in border areas. From detailed work in one locality, over 95% attend the local hospital and we have no reason to think this should be any different in the rest of the region. This is similar to data for other chronic conditions.

Regarding a correction being made for multiple comparisons, the differences between referral patterns are large and the P values remain highly statistically significant (ie $p < 0.001$) with and without bonferroni corrections.

We have changed gender to sex throughout the document but are happy to accept whichever term is usually used in BMJ Open

We have not amended the text around alcoholism and cancer but to explain: Alcohol abuse often presents to hospital with a seizure but most neurologists would describe this as part of the alcohol spectrum and not as epilepsy. Similarly, cancer is a common cause of late onset epilepsy. If either of these were present then we would expect those patients to be seen in clinics other than neurology - which might have explained a low neurology referral rate. However the number of cases in which codes for these conditions occurred were few

We have not amended the text around bed days as the concept of bed days (number of admissions x mean length stay) is often used to describe the burden of a given condition on NHS use - we believe its sufficiently well known not to require it to be redefined in each paper but would be happy to add that if you wish.

The sentence starting with the words ' perhaps because by the time GPs... has been moved from the introduction to the discussion

VERSION 2 – REVIEW

REVIEWER	Rhys Thomas Cardiff University University Hospital of Wales
REVIEW RETURNED	10-Nov-2015

GENERAL COMMENTS	<p>The authors' rebuttal is sensible and defends a number of suggestions that I made regarding alternate conclusions that can be made. I was impressed that these were backed up with data.</p> <p>I look forward to being able to show this work to my colleagues and think it will be useful in improving manpower and epilepsy services in the UK.</p>
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Correction

Grainger R, Pearson M, Dixon P, *et al.* Referral patterns after a seizure admission in an English region: an opportunity for effective intervention? An observational study of routine hospital data. *BMJ Open* 2016;6:e010100.

In the abstract the third sentence of the results section states:

“Subsequent attendance at a specialist clinic is more likely if already known to a clinic, if aged <35 years, if female, or required a **longer** spell in hospital.”

The word **longer** should have been **shorter**. The regression is correct in the main body of text and table.

In addition, tables 2 and 3 include different legends and footnotes (correctly) but contain identical data. The data from table 2 appears twice. The correct data for table 3 is given below.

Table 3 Comparison of patients according to whether or not they were offered a clinic appointment within 3 months (whole cohort – rather than inter-hospital differences)

	GROUP A: Patients “known” to the specialist team (n=3066)		Group B: Patients who are new or not under follow-up (n=5806)	
	Not offered neurology clinic appointment	Offered neurology clinic appointment	Not offered neurology clinic appointment	Offered neurology clinic appointment
Number of patients (% of group)	1621 (53%)	1445 (47%)	5153 (89%)	653 (11%)
DNA rate at the given clinic (%)	n/a	14.3	n/a	11.5
Number of patients actually seen (% of group)	n/a	1238 (40%)	n/a	581 (10%)
Co-morbidity (% with Charlson score ≥ 1)	123 (7.6%)	75 (5.2%)	904 (17.5%)	65 (10%)
Mean age (years (SD))	49.2 (17.3)	43.7 (16.6)	60.7 (19.7)	47.3 (18.4)
Sex (% male)	57.6	53.1	55	53.6
Mean Length of Stay (days)	5.3	3.9	6.5	3.8
Mean IMD rank	9545	10 025	11 279	11 466
Mean number of ED visits in prior year	3.4	3.8	2.6	2.4
Mean readmission rate in the year after	38.4%	48.5%	30.1%	35.0%
Mean number of ED visits in the year after	3.4	2.9	2.0	2.2
Discharged to nursing home (%)	4.4	2.4	9.8	2.8

*Group B is significantly different from Group A, $p < 0.01$.

ED, emergency department; IMD, Index of Multiple Deprivation; OPD, outpatient department.

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