



Short communication

Trends in the first antiepileptic drug prescribed for epilepsy between 2000 and 2010



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ABSTRACT

Purpose: To investigate changes in the choice of first anti-epileptic drug (AED) and co-prescription of folic acid after a new diagnosis of epilepsy.

Methods: We searched anonymised electronic primary care records dating between 2000 and 2010 for patients with a new diagnosis of epilepsy and recorded the first AED prescribed and whether folic acid was co-prescribed.

Results: From 13.3 million patient years of primary care records, we identified 3714 patients with a new diagnosis of epilepsy (925 children and 649 women aged 14–45 years). Comparing first time AED prescriptions in 2000 and 2001 to those in 2009 and 2010 showed a significant decrease in the proportion of carbamazepine and phenytoin prescribed and a significant increase in the proportion of lamotrigine and levetiracetam prescribed. In women aged 14–45 years, and girls aged <18 there was a significant decrease in the proportion of sodium valproate prescribed. Women aged 14–45 years were significantly more likely to be co-prescribed folic acid with their first AED compared to all other patients (20% vs 3%, p -value < 0.001). The proportion of folic acid co-prescribed with the first AED did not change significantly between 2000 and 2010.

Conclusion: The changing trends in the first AED prescribed over the last decade, particularly in women of childbearing age, reflect published evidence in terms of AED efficacy, tolerability and safety.

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1. Introduction

Several factors have influenced the selection of appropriate anti-epileptic drugs (AEDs) to treat epilepsy during the last decade. The side effect profiles of older AEDs are less acceptable when compared with newer AEDs.¹ Randomised controlled trials have directly compared the efficiency and tolerability of AEDs. For example, the SANAD trial recommended lamotrigine as first line treatment for focal epilepsies and sodium valproate as the first line treatment for generalised or unclassified epilepsy.² Several new effective AEDs have become available e.g. eslicarbazepine acetate, lacosamide, levetiracetam, oxcarbazepine, pregabalin, rufinamide, and zonisamide. Potentially harmful effects of certain AEDs on the

cognitive and physical health of the unborn and developing child are increasingly recognised – in particular sodium valproate.^{3,4} National guidelines have recommended the co-prescription of folic acid with AEDs for women who may become pregnant.⁵

In the UK, every individual is assigned a National Health Service (NHS) general practitioner (GP). GPs prescribe the vast majority of AEDs in the UK. To ensure that patients with epilepsy receive the best treatment, it is important to know whether actual prescribing practice reflects current best recommended practice. A patient with epilepsy and good seizure control on an established AED is not often changed to a potentially more suitable AED, given the risk of seizure recurrence. We therefore specifically looked at the trends of first time prescriptions of AEDs using GP records in Wales, UK.

2. Methods

GP primary care electronic health records are stored within the Medical Research Council Centre for Informatics and Public Health

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Research (CiPHER) at Swansea University, UK, as part of the Secure Anonymised Information Linkage (SAIL) system.^{5,7} At the time of analysis, the SAIL system had approximately 40% of the Welsh population's GP records available (around 1.1 million people).

We electronically searched all SAIL records for patients with a diagnosis of epilepsy recorded for the first time between 1st January 2000 and 31st December 2010, and who were prescribed an AED for the first time on at least two consecutive occasions within 12 months of the diagnosis date. For each patient matching these criteria, we recorded the first AED prescribed, together with their age, sex, year of diagnosis and whether folic acid was co-prescribed. (It is not possible to obtain accurately the type of epilepsy from the GP records). We grouped the data into the following age categories: children (aged 0–17 years); adults (aged ≥ 18 years) and women of child-bearing age (defined as aged between 14 and 45 years). We plotted trends in AED prescriptions and calculated correlation coefficients. We also compared the proportions of AEDs prescribed in 2000 and 2001 compared to those prescribed in 2009 and 2010. Pearson's product-moment

correlation and proportion tests were calculated using the statistical software package R version 2.15.2.

Due to anonymisation issues, we excluded AEDs which constituted $<2\%$ of total prescriptions – these included ethosuximide, gabapentin, oxcarbazepine, phenobarbital, topiramate and zonisamide.

This study was approved by the HIRU information governance panel (Project 0202). The National Research Ethics Service has confirmed that HIRU projects using anonymised data do not require specific NHS research ethics committee approval.

3. Results

We analysed 13.3 million patient years of GP records (a mean of 1.2 million patients every year between 2000 and 2010) and identified 3714 patients with a new diagnosis of epilepsy who met the inclusion criteria. Of these, there were 2722 adults (aged ≥ 18 years); 992 children (aged 0–17 years); and 649 women of childbearing age (14–45 years of age). Fig. 1 shows trends in AED

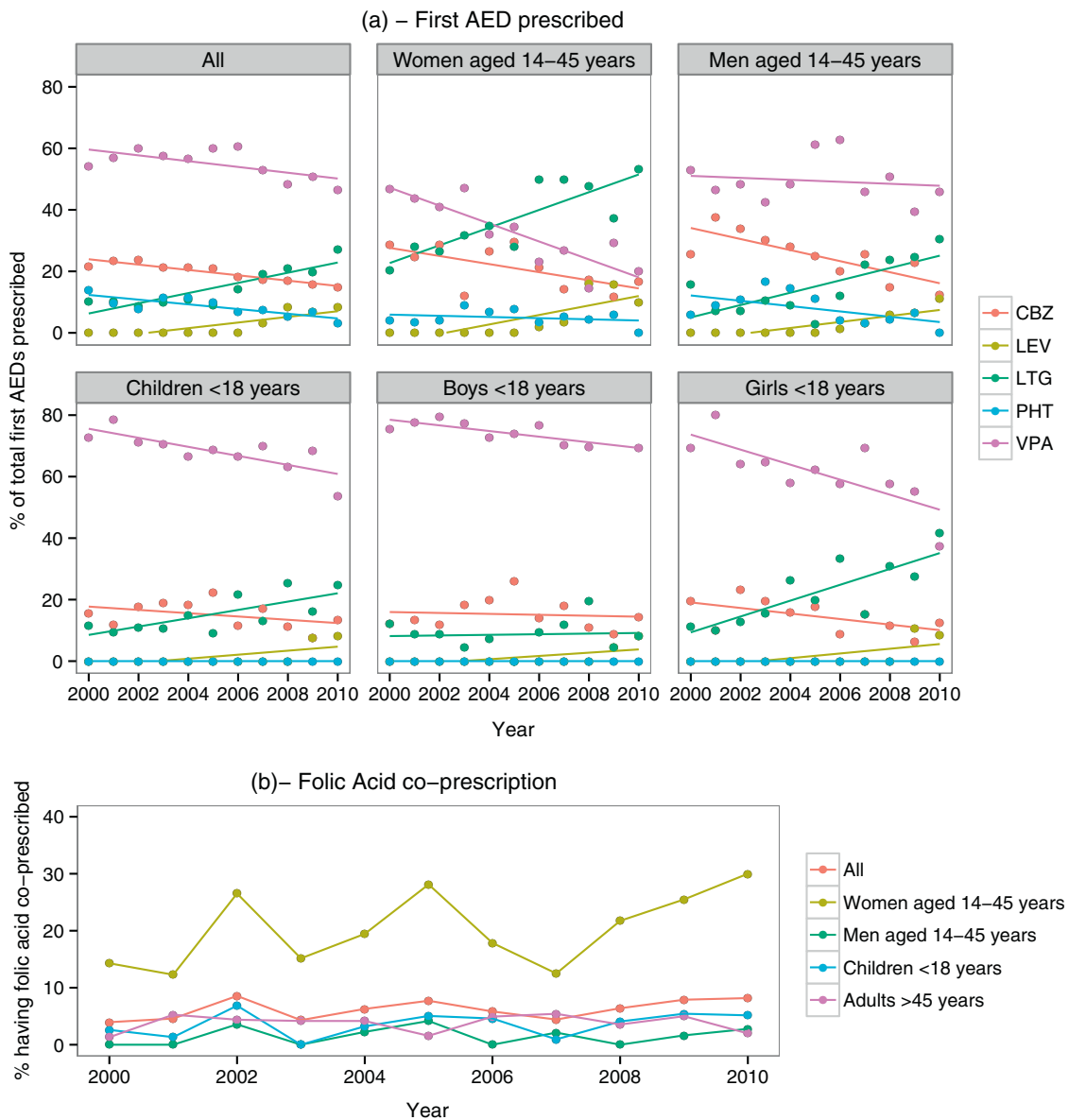


Fig. 1. (a) First AED prescribed as a proportion of all first AED prescriptions by year between 2000 and 2010. Lines represent linear regression models of the data points. (b) Proportion of first AED prescriptions having a co-prescription of folic acid between 2000 and 2010. (CBZ, carbamazepine; LEV, levetiracetam; LTG, lamotrigine; PHT, phenytoin; VPA, sodium valproate).

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