Cost-effectiveness of HLA-B*15:02 screening in Malaysia
Plumpton, Catrin; Hughes, Dyfrig

British Journal of Dermatology

DOI:
10.1111/bjd.15832

Published: 01/10/2017

Peer reviewed version

Cyswllt i'r cyhoeddiad / Link to publication

Dyfnyiad o'r fersiwn a gyhoeddwyd / Citation for published version (APA):

Hawliau Cyffredinol / General rights
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Take down policy
If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

01. Nov. 2020
Cost-effectiveness of HLA-B*15:02 screening in Malaysia

Catrin Plumpton* and Dyfrig Hughes

1 Centre for Health Economics and Medicines Evaluation, Bangor University

*Author for correspondence, e-mail address: c.o.plumpton@bangor.ac.uk

ORCID ID

Catrin Plumpton: orcid.org/0000-0003-2710-9199

Dyfrig Hughes: orcid.org/0000-0001-8247-7459

This issue of BJD includes an interesting article considering the cost-effectiveness of HLA-B*15:02 screening in Malaysia [1]. Adverse drug reactions (ADRs) are a major cause of iatrogenic morbidity, mortality and treatment costs [2,3,4]. Strategies to avoid ADRs, including pharmacogenetic prediction, have clear therapeutic potential. There is strong evidence associating HLA-B*15:02 with increased susceptibility to severe cutaneous ADRs, including Stevens-Johnson syndrome (SJS) and toxic-epidermal necrolysis (TEN), in patients prescribed carbamazepine. Consequently, the US Food and Drug Administration requires (and the Health Canada Santé Canada recommends) screening prior to initiation of carbamazepine for patients with ancestry from genetically at-risk populations [5].

Economic evaluations of HLA-B*15:02 screening indicate that routine testing may be cost-effective in Thai and Singaporean populations, however results are sensitive to allele prevalence and choice of comparator [6,7,8]. In this issue, Chong and colleagues present a decision-analytic model to assess the cost-effectiveness of screening for HLA-B*15:02 in an ethnically diverse population of Malaysian epilepsy patients. The analysis compares realistic strategies of universal carbamazepine initiation without screening (current practice); universal screening for HLA-B*15:02 with carbamazepine or sodium valproate prescribed depending on test result; and universal prescription of sodium valproate. In cases of treatment failure with sodium valproate, topiramate is assumed as a third line option. The analysis is conducted from a Malaysian societal perspective, and is therefore inclusive of patient and carer out-of-pocket expenses and productivity loss. Results are reported over a lifetime horizon capturing the full effects of SJS/TEN sequelae and the impact of alternative treatments.

The results of the base-case analysis indicate that current practice is both less costly and more effective than either alternative strategy, hence, screening is unlikely to be cost-effective in Malaysia.

This contrasts with previous studies, principally by accounting for the long-term differential impacts of the evaluated antiepileptic drugs on seizure control. This is consistent with other economic evaluations of pharmacogenetics in epilepsy [9] and follows good modelling practice in taking full consideration of downstream costs and effects [10]. Consequently, as sodium valproate is less effective than carbamazepine in achieving seizure remission, unnecessary changes in prescription (e.g. because of false positive test results) will lead to less effective control of epilepsy, and offset the benefits of testing.

The economic model predicts that screening 222 patients will avoid 1 case of SJS/TEN, but at the expense of 3 additional patients having uncontrolled epilepsy. The utility experienced in these 3 patients (0.69) compared to those in remission (0.96) goes some way to counter the gains made through the avoidance of one SJS/TEN event associated with a utility of 0.29.
The authors use a (published) local study to inform the parameter value for mortality (4.2%); significantly lower than is typically quoted for SJS/TEN (15%-50%) [3,4]. It would perhaps have been interesting to see the impact of this parameter on cost-effectiveness, but also highlights that with improved recognition and diagnosis, that survival outcomes can be improved, which should be acknowledged in future economic evaluations.

The findings of this evaluation highlight the importance of carrying out robust, population-specific economic analyses to best inform local evidence-based policy.


