

HOW GOOD ARE WE AT HLA-B27 TESTING? AN ANALYSIS OF 10 YEARS OF EXTERNAL QUALITY ASSESSMENT



Welsh Blood Service
Gwasanaeth Gwaed Cymru

Susan Corbin & Chris Darke



for HISTOCOMPATIBILITY and IMMUNOGENETICS
UNITED KINGDOM EXTERNAL QUALITY ASSESSMENT SERVICE

WELSH TRANSPLANTATION AND IMMUNOGENETICS LABORATORY

Introduction

HLA-B27/2708 (B*27) testing is routinely performed by laboratories of several specialties as an aid to the diagnosis of the 'B27-associated' diseases.

The UK National External Quality Assessment Service for Histocompatibility and Immunogenetics (UK NEQAS for H&I) have operated an HLA-B27/2708 testing scheme since 1990.

Here we present an analysis of our Scheme 1B – 'HLA-B27 Testing', for the years 2003 to 2012.

Scheme material

10 selected blood samples, augmented for HLA-B27 and B7, were provided in 5 batches, of 2 samples per batch, each year.

Of the 100 samples provided:

- 38 were B27 positive
- 51 were B27 negative, B7 positive
- 11 were B27 negative and B7 negative

No HLA-B2708 positive samples were provided.

Participants

These reported on the samples' B27 positive, B27 negative or B27 'equivocal' status together with some key technical information.

Results

Overall findings

A total of 8,011 reports were assessed over the 10 years received from ~68 laboratories in 2003 rising to ~93 laboratories in 2012 (a minority of labs either start or leave part way through a year).

Laboratories from 26 countries participated in 2012.

- 73 (0.91%) reports specified 'equivocal' B27 status
- 51 reports were false B27 positive and 27 were false B27 negative assignments

Thus, over the 10 years, and excluding reports of equivocal assignments, correct B27 status was specified in 99.02% of reports.

Correct reporting for each year

This ranged from 97.46% (in 2006) to 99.77% (in 2010). The low 2006 figure was largely caused by 16 false B27 positive assignments on a single HLA-B7, B42 sample (see *Int J Immunogenet* 2007, 34, 301).

B27 typing methods

These varied throughout the decade. Interestingly, flow cytometry alone was the method of choice in 2003 (52.9% of 63 labs), decreasing steadily to 32.6% of 92 labs in 2012.

Importantly, all reports of 'equivocal' B27 status and 89.74% (n=70) of the 78 overall errors were obtained using flow cytometry-based testing alone.

Of the 8 errors using other methods 3 used CDC, 1 SSO, 2 SSP and 2 real-time PCR.

Sample mix-ups

The 4 erroneous reports using SSP and real-time PCR both gave a pattern consistent with a 2 sample mix-up.

Thus, mix-ups were indicated when the correct B27 status on a batch of two samples was pos, neg and the laboratory's report stated neg, pos, or conversely.

Accordingly, mix-ups occurred on an average of 0.7 times per year over the 10 years.

Comments

HLA-B27 reporting is clearly consistently accurate but has always failed to reach the 100% accuracy level that might be expected for such a straightforward test.

Flow-cytometry-based B27 testing must be judiciously established, controlled and monitored.

Further information

Full information on all UK NEQAS for H&I schemes is available at www.neqashandi.org or contact the Scheme Manager:

Susan Corbin
Welsh Blood Service
Pontyclun CF72 9WB, Wales, UK

Fax: + 44 (0) 1443 622185

E-mail: ukneqashandi@wbs.wales.nhs.uk