

ACCURACY OF HLA TYPING IN THE UNITED KINGDOM AND REPUBLIC OF IRELAND - 1995-2000



WELSH BLOOD SERVICE
GWASANAETH GWAED CYMRU

WELSH TRANSPLANTATION AND IMMUNOGENETICS LABORATORY



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Since 1995



Since 1998

Introduction

UK National External Quality Assessment Schemes for Histocompatibility and Immunogenetics (UK NEQAS for H&I) have provided an HLA phenotyping scheme (Scheme 1A) since 1975. Here we present a prospect of the accuracy of HLA-A, B, C, DR and DQ assignments, at the split specificity level, in the UK over the 6-year period 1995-2000.

Samples, laboratories and methods

Ninety-six random blood donor samples were distributed (16/year) over the period.

The mean number of participating laboratories was 40, range 37 to 43/year, with 36 laboratories reporting for the whole 6-year period.

Failure to detect a specificity, its mis-assignment or its assignment at the broad rather than the split specificity level were all considered as 'errors'.

For each year a specificity accuracy index (SAI) was calculated as: % of correct assignments over those reported. Errors were 'one-way'; e.g. the report of HLA-A1 when the consensus specificity was HLA-A2 was an error for HLA-A2 only. Specificity 'blanks' (likely homozygotes) were treated as specificities.

SAIs of 100% were noted and their number expressed as: % of error free specificities (EFS) over the total number of different specificities tested for each locus/year.

SAIs were determined for each locus, and SAIs and EFSs calculated for HLA-A,B,DR and HLA-A,B,C,DR,DQ combined.

Results

Typing accuracy of individual loci and combinations of loci

Over the six years SAIs showed a steady improvement for each locus. This particularly applied to HLA-C and HLA-DQ typing where their SAI both rose from <85% in 1995 to >98% in 2000 (Figure 1).

For HLA-A,B,DR combined the SAI rose from 93.5% in 1995 to 99.4% in 2000 while the EFS increased from 29.7% to 72.7% (Figure 2).

For HLA-A, B, C, DR and DQ typing the SAIs increased from 91.8% to 98.5% while their EFS rose from 20.4% to 62.8% (Figure 2).

C DARKE AND S CORBIN

(On behalf of the UK NEQAS for Histocompatibility and Immunogenetics Steering Committee)

Typing accuracy of individual specificities

The SAIs of some HLA specificities improved markedly over the period, examples included:

- ! A68 - 26.2% in 1995 steadily raising to 83.8% in 1999
- ! DR13 - 61.3 % in 1995 to 100.0% in 2000
- ! B46 (tested in 1996 and 1999 only) rose from 37.2% to 88.6%
- ! B65 (tested in 1996 and 1999 only) rose from 40.5% to 78.9%

Assignment of 'serologically undetectable' HLA-C 'specificities'

The assignment of HLA-Cw*12, Cw*14-Cw*18, showed a notable improvement from 17.9% in 1995 to 100.0% in 2000.

Error free specificities

Only a small number of specificities were always correctly assigned, i.e. they were error free, over the whole six years. Thus, of the 59 different specificities that were seen during at least three of the six year period, only HLA-A11, A30, B13, B50, B55 were always correctly reported.

HLA-A,B,C,DR,DQ typing accuracy in 2000

In 2000, 99.12% of 5,127 individual HLA-A,B,C,DR,DQ specificities were correctly assigned by UK laboratories. This clearly exemplifies the current high level of HLA typing accuracy in the UK and Ireland.

Figure 1. Specificity Accuracy Indices - 1995-2000

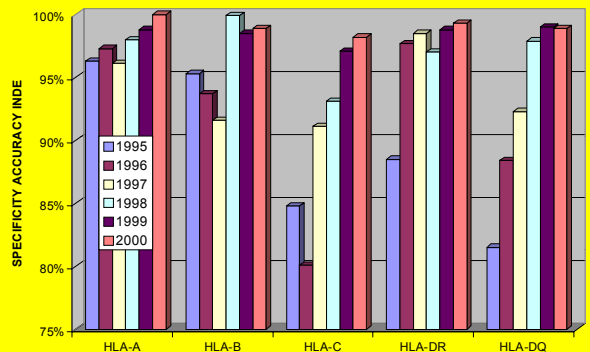


Figure 2. Specificity Accuracy Indices and % Error Free Specificities (EFS)

