UK NEQAS
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Histocompatibility & Immunogenetics

UK NEQAS for H&I's Educational Scheme for combined HLA Typing, Antibody Detection/Specification and Crossmatching

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Introduction

To enable laboratories to compare results and clinical interpretation from multiple assays, an educational exercise was offered to participants in 2016 with the aim of mimicking a renal transplant scenario.

There were 2 distribution of samples in 2016. Each distribution comprised of one 'donor' blood sample and three 'patient' serum samples. Sera from a highly sensitised patient (HSP), a moderately sensitised patient (MSP) and non transfused female blood donors were used for each distribution.

Laboratories were asked to perform the tests they routinely carried out in a live unrelated donor kidney transplant setting:

- HLA typing (PCR-SSP, PCR-SSO, SBT)
- Antibody detection/specification (Luminex, CDC, ELISA)
- Crossmatching (CDC with/without DTT, FCXM)

Participants were requested to list donor specific antibodies (DSAs) and to provide a clinical interpretation of the results envisaging that the three serum samples were from three different renal 'patients' who were all ABO compatible with the 'donor'.

20-22 labs participated in the 2 distributions, although not all reported on every aspect.

Distribution 1 Results

Serum 1: Pooled female, non-transfused, blood donors.
12/20 (60.0%) labs detected DSAs with MFIs ranging from 998 – 3172. 14/20 (70.0%) labs classed this as 'low risk' based on negative crossmatch results and low level DSAs. The remaining 6/20 labs assigned a medium risk.

Serum 2: HSP
20/20 labs detected DSAs with MFIs up to 26650. 20/20 (100.0%) labs judged their findings as a high risk or contraindication to transplantation based on the positive CDCXM and FCXM and the high level DSAs.

Table 1: Educational Scheme Distribution 1 Results

Test/Interpretation			Report	No. of Labs
Serum 1	DSAs Present?		Yes	12/20 (60.0%)
	CDCXM	No DTT	Negative	15/16 (93.8%)
		DTT	Negative	16/16 (100.0%)
	FCXM		Negative	13/14 (92.9%)
	Assigned Risk		Low	14/20 (70.0%)
Serum 2	DSAs Present?		Yes	20/20 (100%)
	CDCXM	No DTT	Positive	15/16 (93.8%)
		DTT	Positive	11/16 (78.6%)
	FCXM		Positive	14/14 (100.0%)
	Assigned Risk		High/Veto	20/20 (100.0%)
Serum 3	DSAs Present?		Yes	19/19 (100.0%)
	CDCXM	No DTT	Negative	14/16 (87.5%)
		DTT	Negative	14/14 (100.0%)
	FCXM	T Cell	Positive	8/12 (66.7%)
		B Cell	Negative	8/11 (72.7%)
	Assigned Risk		Medium	12/20 (60.0%)

Serum 3: MSP

19/19 labs detected DSAs with MFIs ranging from 615 – 7795. 12/20 (60.0%) participants classed this as 'medium risk' based on the presence of DSAs in combination with negative CDCXM and positive/equivocal FCXM. 1/20 labs assigned a low risk, 4 assigned a high risk and 3 a contraindication.

Distribution 2 Results

Serum 1: HSP.
22/22 (100.0%) labs detected DSAs with MFIs ranging from 749 – 17205. 20/20 (100.0%) labs classed this as a high risk/contraindication to transplant based on the positive crossmatch results and multiple, high MFI DSAs.

Table 2: Educational Scheme Distribution 2 Results

Test/Interpretation			Report	No. of Labs
Serum 1	DSAs Present?		Yes	22/22 (100.0%)
	CDCXM	No DTT	Positive	14/15 (93.3%)
		DTT	Positive	11/12 (91.7%)
	FCXM		Positive	17/17 (100%)
	Assigned Risk		High/Veto	20/20 (100%)
Serum 2	DSAs Present?		No	22/22 (100%)
	CDCXM	No DTT	Negative	15/15 (100%)
		DTT	Negative	12/12 (100%)
	FCXM		Negative	16/17 (94.1%)
	Assigned Risk		Low	22//22 (100%)
Serum 3	DSAs Present?		No	14/22 (63.6%)
	CDCXM	No DTT	Negative	15/15 (100%)
		DTT	Negative	12/12 (100)
	FCXM		Negative	13/16 (81.3%)
	Assigned Risk		Low	16/22 (27.3%)

Serum 2: Female, non transfused blood donor
22/22 labs reported the absence of DSAs. 12/12 reported negative CDCXM and 15/16 (93.7%) negative FCXM. 22/22 (95.0%) classed this as a 'low risk' transplant due to the negative crossmatch results and absence of DSA.

Serum 3: MSP
5/22 (22.7%) labs detected DSAs, however all labs reported negative CDCXM and 13/16 (81.3%) reported negative T and B cell FCXM. 16/22 (72.7%) participants classed this as 'low risk' based on negative crossmatch results and absence of DSAs. The remaining 6/22 assigned a medium risk.

Comment

This exercise has highlighted both concordances but also important variations between different laboratories. The scheme will be continued and may form the basis of future formal EQA scheme design.

Further Information

Full information on all UK NEQAS for H&I schemes is available at **www.neqashandi.org.uk** or contact the Schemes' Manager at **ukneqashandi@wales.nhs.uk**

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