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Histocompatibility & Immunogenetics

Clinical decision making in H&I Laboratories – results from the UK NEQAS for H&I's Interpretative Educational Scheme

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Introduction

UK NEQAS for H&I have operated a free interpretative educational scheme since 2013.

3 clinical scenarios are distributed yearly covering solid organ, HSC transplantation and platelet transfusion. Each case provides laboratory test results and clinical information: they require affirmed clinical decisions/clinical advice. Here were present the findings of the three 2016 scenarios.

Scenario 1: Renal Transplant Case

This scenario involved a patient awaiting renal transplant, with previous liver transplant and multiple pregnancies (50 participants). The scenario provided the patient's HLA type, sensitising events, and Luminex Single Antigen results (MFI range 0-20251).

From details provided for 4 deceased donors, 90-98% of participants would not proceed to transplant based on a virtual crossmatch with 3 of the donors. For the 4th donor 52% would transplant this sensitised patient due to absence of DSA (Table 1).

Table 1: Number of labs that would perform a virtual crossmatch (VXM) for 4 potential deceased donors

VXM	Donor 1	Donor 2	Donor 3	Donor 4	Reasons for selection
No	**49 (98%)**	**45 (90%)**	**45 (90%)**	24 (48%)	Sensitised patient, DSA present, VXM not performed, repeat mismatches
Yes	1 (2%)	5 (10%)	5 (10%)	**26 (52%)**	No DSA, HLA match

Participants were asked to select a risk category for 2 potential live transplants who had CDC negative but positive B cell flow cytometry crossmatch results. For live donor 1, 90% selected a high risk/contraindication to transplant. There was more variation for donor 2 with 42% selecting a medium risk (Table 2).

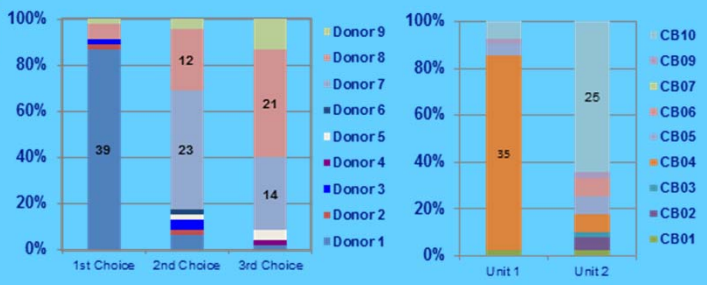
Table 2: Risk level selected for potential live transplants

Risk Category	Low	Low/ Medium	Medium	Medium/ High	High/ Contra-indication	Other/ Undecided
Live Donor 1 DQ9 DSA MFI >10,000	0	0	3 (6%)	1 (2%)	45 (90%)	1 (2%)
Live Donor 2 DQ2 DSA MFI <3000	9 (18%)	1 (2%)	21 (42%)	0	16 (32%)	3 (6%)

Scenario 2: HSCT Case

This scenario involved an adult AML patient with 'challenging' HLA type requiring HSCT (45 participants). Unrelated donor search results for 9 donors were provided. From these donors, 95.5% of labs chose the same donor as one of their 3 selections, with 86.7% selecting it as their first choice (Figure 1a) .

When a cord blood search was initiated, 75.6% of participants would require a double unit transplant for this adult patient.



a. Unrelated donor selection b. Cord Blood Unit Selection

Figure 1: (a) Unrelated donor and (b) cord blood unit selection

From the provided 10 cord blood units, the same 2 units were selected by 53.3% of participants (Figure 1b).

When a DPB1 donor specific antibody was detected (MFI 2000-6000), 80.0% of labs stated this would constitute an increased risk to the transplant.

Scenario 3: Platelet Case

This scenario involved a post-HSCT patient with HLA and HPA antibodies refractory to random donor platelets (23 participants).

From provided Luminex Single Antigen results (MFI range 0-12679) and HPA antibody results (HPA-5b antibody), 95.6% of labs chose the same donor as one of 3 selections from 24 HLA & HPA typed apheresis donors (Figure 2).

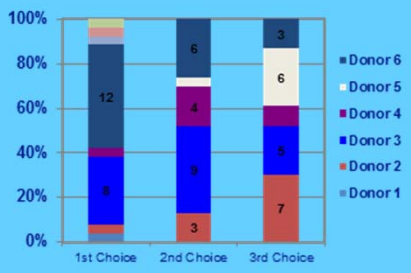


Figure 2: Platelet donor selection

When provided with platelet increment data after the transfusion of several HLA and HPA compatible units, 20 labs (87.0%) reported they would perform additional tests, 17 of these stating they would perform ABO antibody titres.

Comment

Although the scenarios are not formally assessed they allow documented clinical interpretation/advice to be compared between laboratories. While there was good agreement on many aspects of the scenarios, others show more variation.

Further Information

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

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