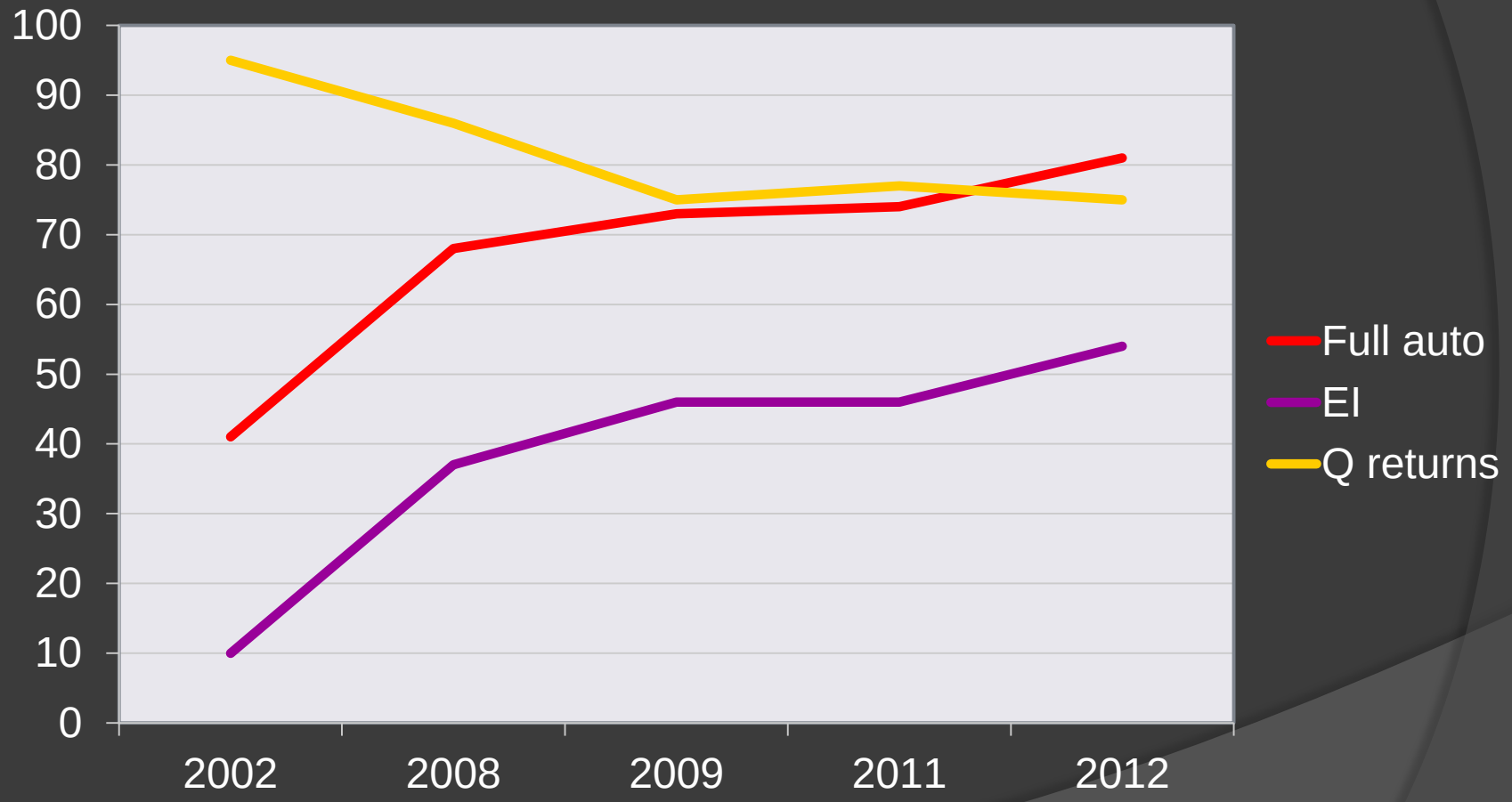
Clare Milkins
Scheme Manager
Manchester November 2012

UK NEQAS (BTLP) UPDATE

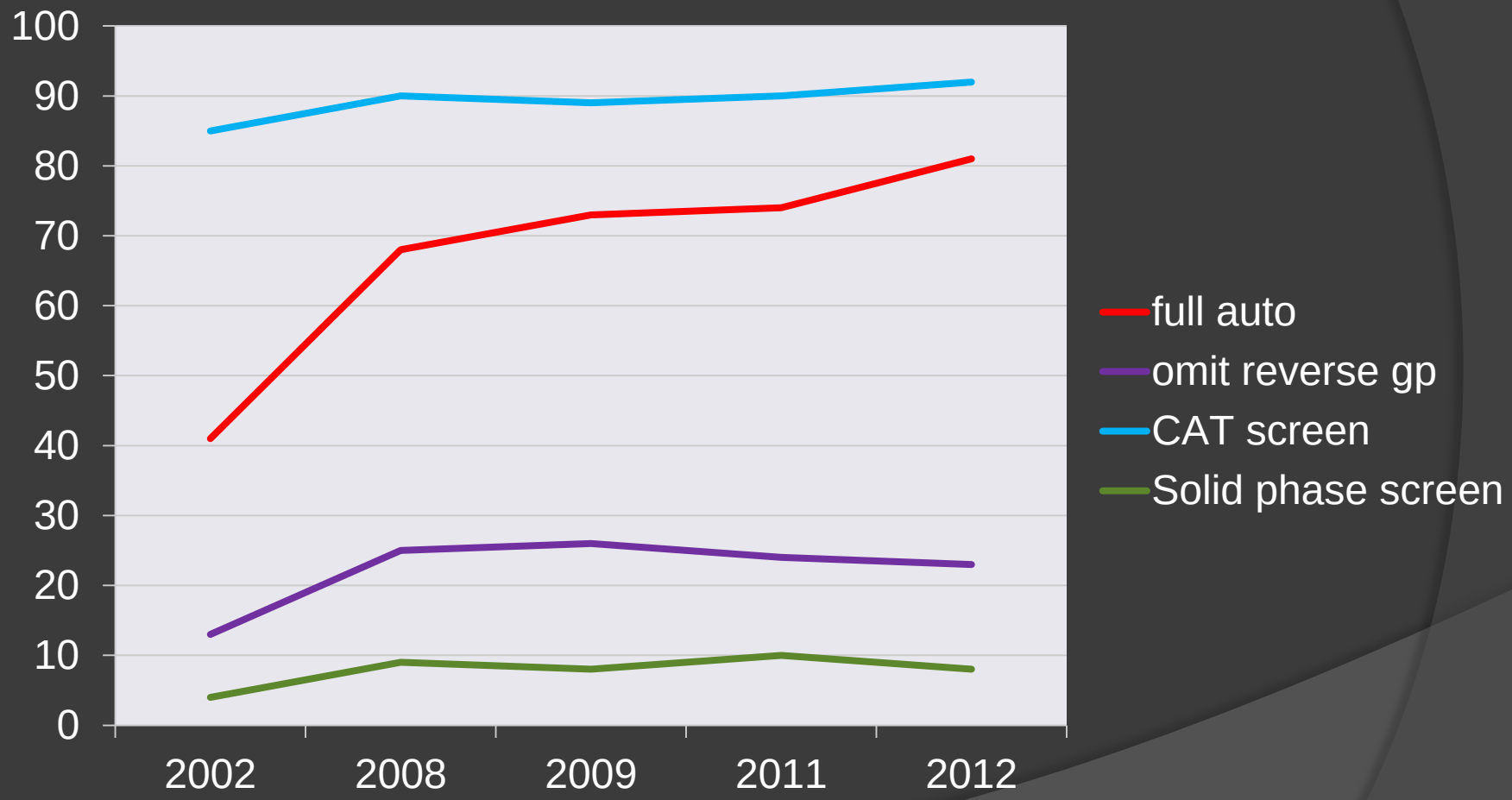
Today's update

- Trends in standard practice - questionnaire data
- Updated web results pages
- Quality issues
  - CPA/UKAS
  - Participant suggestions for improvement
- New developments
  - Learning points in slides
  - CAPA forms
- Future developments

Trends in Practice



Trends in practice



Changes to web result pages

- Web result pages under re-development
- More clarity
- De-cluttered
  - Techniques moved to a separate tab
- ABO/D reagents moved around to better match cards/cassettes
- More notes available

UK NEQAS
Haematology Schemes

UK NEQAS National External Quality Assessment Site

version: 3.01

Sample Entry Details

Back to List | Print | Save | Submit

Blank data entry form Email scheme | Antibody ID UI Rules and Faxheader Data Entry Instructions

BLOOD TRANSFUSION LABORATORY PRACTICE

Distribution Number: 12R7 **Participant:** 26000 **Issued:** 16/07/2012 **Closing:** 30/07/2012 **Received Date** (dd/mm/yyyy): **Analysed Date** (dd/mm/yyyy):

Sample Quality | Patient 1 | Patient 2 | Patient 3 | Techniques | Phenotyping | 01/08/2012

Patient 1 - ABO/D Typing

Reaction grade vs.

Anti-A	Anti-B	Anti-D1	Anti-D2	Reagent Control	A Cells	B Cells
Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated
Negative	Negative	Negative	Negative	Negative	Negative	Negative
Strong	Strong	Strong	Strong	Strong	Strong	Strong
Weak	Weak	Weak	Weak	Weak	Weak	Weak
MF	MF	MF	MF	MF	MF	MF

Strong = strong positive (3-4+), Weak = weak positive (w-2+), MF = mixed field (dual population)

ABO / D Interpretation

Not Stated	Not Stated
O	Pos
A	Neg
B	Dvariant [1]
AB	UI [2]
UI [2]	Unable to Test [3]
Unable to Test [3]	

Notes

[1] D variant includes weak and partial D
[2] UI = unable to interpret
[3] Unable to test is only to be used in situations where the sample is unsuitable for testing and a repeat cannot be obtained before the closing date

NB - Where more than one technique is used to arrive at an interpretation, mark the most appropriate reaction grades for the final interpretation, and if reaction grades differ, please email the scheme via the link above

Softer colours

Patient 1 - Direct Antiglobulin Test (DAT)

DAT with a polyspecific AHG reagent: Not Stated | Positive | Negative

Patient 1 - Antibody Screening

Reaction grades

IAT -- Select IAT --
Enzyme -- Select Enzyme --
Other -- Select Other --

Strong positive = 3-4+, Weak positive = w-2+

Notes

[1] Unable to test is only to be used where the sample is unsuitable for testing and a repeat sample cannot be obtained before the closing, or where reagents are not available

Antibody Screening Interpretation

- Not Stated
- None Detected
- Antibody Present
- Unable to test [1]

Patient 1 - Antibody Identification

Antibody specificities positively identified (currently a maximum of 2 in any sample)		Notes	Specificities that cannot be excluded	
☐ D	☐ k	[1] UI = Unable to interpret	☐ D	☐ s
☐ C	☐ Le^a	You may indicate commonly encountered antibodies of potential clinical significance that cannot be positively identified but might be present (cannot be excluded) based on your testing and the phenotype provided.	☐ C	☐ K
☐ c (+/-E)	☐ Le^b		☐ c (+/-E)	☐ Fy^a
☐ E	☐ Fy^a	If you wish these to be taken into account for scoring and performance monitoring you must also make a UI submission by clicking on the "**Antibody ID UI rules and faxheader**" link above and following the instructions on the downloadable form.	☐ E	☐ Fy^b
☐ e (+/-C)	☐ Fy^b		☐ e (+/-C)	☐ Jk^a
☐ M	☐ Jk^a		☐ M	☐ Jk^b
☐ N	☐ Jk^b	Please note that if you have positively identified 2 specificities there is no need to make a UI submission as UK NEQAS samples currently do not contain more than two.	☐ S	
☐ S	☐ UI [1]			
☐ s	☐ C^w			
☐ P_1	☐ Kp^a			
☐ Lu^a	☐ Non-specific antibody			
☐ K				

Additional Information

Number of reagent red cells used (including screening panel cells)	Enzyme panel used?	Would refer for confirmation?
◉ Not Stated ○ <15 ○ 15-25 ○ >25	○ Not Stated ○ Yes ○ No	◉ Not Stated ○ Yes ○ No

Patient 1 - Crossmatching

Donor W		Donor Y		Donor Z	
Method: -- Select a Method --		Method: -- Select a Method --		Method: -- Select a Method --	
Serological crossmatch reactions	**Interpretation**	**Serological crossmatch reactions**	**Interpretation**	**Serological crossmatch reactions**	**Interpretation**
DRT -- Select --	◉ Not Stated	DRT -- Select --	◉ Not Stated	DRT -- Select --	◉ Not Stated
IAT -- Select --	○ Compatible [1]	IAT -- Select --	○ Compatible [1]	IAT -- Select --	○ Compatible [1]
Other -- Select --	○ Incompatible [2]	Other -- Select --	○ Incompatible [2]	Other -- Select --	○ Incompatible [2]
	○ Unable to test [3]		○ Unable to test [3]		○ Unable to test [3]
If compatible, would you transfuse? [4]	◉ Not Stated ○ Yes ○ No	**If compatible, would you transfuse? [4]**	◉ Not Stated ○ Yes ○ No	**If compatible, would you transfuse? [4]**	◉ Not Stated ○ Yes ○ No

Notes

[1] *Compatible* includes where compatibility established by serological or theoretical means

[2] *Incompatible* includes where units are de-selected due to theoretical incompatibility (where the donor is positive for the antigen corresponding to an antibody identified in the patient)

[3] *Unable to test* is only to be used where a sample is unsuitable for testing and a repeat cannot be obtained before the closing date

[4] Allows you to tell us that a unit, although found serologically compatible, would not be issued according to your laboratory policy

De-cluttered – techniques moved to separate tab

UK NEQAS
Haematology Schemes

UK NEQAS National External Quality Assessment Site

version: 3.01

Sample Entry Details

Back to List | Print | Save | Submit

Blank data entry form
Email scheme

Antibody ID UI Rules and Faxheader
Data Entry Instructions

BLOOD TRANSFUSION LABORATORY PRACTICE

Distribution Number: 12R7 **Participant:** 26000 **Issued:** 16/07/2012 **Closing:** 30/07/2012 **Received Date** (dd/mm/yyyy): **Analysed Date** (dd/mm/yyyy):

Sample Quality | Patient 1 | Patient 2 | Patient 3 | Techniques | Phenotyping | 01/08/2012

Techniques - Patient 1

Test	Primary Testing Technology	Primary Testing Automated / Manual	Additional Testing (if required to make an interpretation) Technology	Additional Testing (if required to make an interpretation) Automated / Manual
ABO/D	DiaMed	○ Not Stated ○ Manual ◉ Semi-Automated ○ Fully-Automated	NISS Tube	○ Not Stated ○ Manual ◉ Semi-Automated ○ Fully-Automated
IAT Antibody Screen	DiaMed	○ Not Stated ○ Manual ◉ Semi-Automated ○ Fully-Automated	LISS Tube	○ Not Stated ○ Manual ◉ Semi-Automated ○ Fully-Automated
IAT Antibody ID	-- Select Technique --	◉ Not Stated ○ Manual ○ Semi-Automated ○ Fully-Automated	-- Select Technique --	◉ Not Stated ○ Manual ○ Semi-Automated ○ Fully-Automated
IAT Crossmatch	DiaMed	○ Not Stated ○ Manual ◉ Semi-Automated ○ Fully-Automated	LISS Tube	○ Not Stated ○ Manual ◉ Semi-Automated ○ Fully-Automated

Techniques - Patient 2

Test	Primary Testing Technology	Primary Testing Automated / Manual	Additional Testing (if required to make an interpretation) Technology	Additional Testing (if required to make an interpretation) Automated / Manual
ABO/D	DiaMed	○ Not Stated ○ Manual ◉ Semi-Automated ○ Fully-Automated	NISS Tube	○ Not Stated ○ Manual ◉ Semi-Automated ○ Fully-Automated
IAT Antibody Screen	DiaMed	○ Not Stated ○ Manual ◉ Semi-Automated ○ Fully-Automated	LISS Tube	○ Not Stated ○ Manual ◉ Semi-Automated ○ Fully-Automated
IAT Antibody ID	-- Select Technique --	◉ Not Stated ○ Manual ○ Semi-Automated ○ Fully-Automated	-- Select Technique --	◉ Not Stated ○ Manual ○ Semi-Automated ○ Fully-Automated
IAT Crossmatch	DiaMed	○ Not Stated ○ Manual ◉ Semi-Automated ○ Fully-Automated	LISS Tube	○ Not Stated ○ Manual ◉ Semi-Automated ○ Fully-Automated

Techniques - Patient 3

Quality issues

- CPA accreditation maintained
  - Inspection July 2012
  - NCs cleared October 2012
- Future inspections will be to ISO 17043 standards
  - Undertaken by UKAS
  - Annual inspection cycle

Participant suggestions for improvement

- Include assessment for DAT ✓
  - Assessing sources of stable material
  - ? Reduce date
  - Trial in 12R7
  - ? Pilot in 2013
- More Rh phenotyping ✓
  - SC agree
  - Would include Rh and K with every ‘R’ exercise
  - 2013
- Both require some IT development

Participant suggestions for improvement

- Distribute D variants ✓
  - feasibility of getting sufficient donors
- Include C^w/Kp^a in patient phenotypes ✓
  - Antibodies occasionally included in mixture
  - These have been added
- Interactive web entry screens – select card/cassette profile and reagents would default to appropriate order X
  - Great idea but IT unable to support this
- Send reminder email that exercise is closing X
  - now accept saved results at closing even if not 'submitted'

UK NEQAS

New developments

- CAPA form
  - Introduced in 12E2
- Exercise summary slides
  - Introduced with 12E3
  - Provided with web reports
  - Intended for teaching or discussing learning points with staff or at regional meetings

- CPA accredited EQA scheme
- Objective inter-laboratory comparison of results and processes
- Assessment of ABO/D typing, crossmatching, phenotyping, antibody screening and antibody identification
- 10 exercises per year
- 688 participants worldwide

Aims to raise performance standards in blood transfusion laboratories by:

- Highlighting problems with testing / procedures
- Demonstrating the benefits of best practice
- Providing information on causes of laboratory error
- Providing ***education*** and advice

MAIN AIMS OF EXERCISE

- To assess detection of the UK NEQAS ‘Standard’ anti-D.
- To assess identification of a mixture of antibodies.

UK and ROI

- Return Rate: 393/395 (95.5%)
- Sample quality: 100% for all samples

SUMMARY OF MATERIAL

- **Patient 1: Anti-E+Fy^a**:
  - anti-E titre 4 vs. R_2R_2, Fy (a-b+) cells and
  - anti-Fy^a titre 4 vs. R_1R_1 Fy(a+b+) cells
- **Patient 2: Anti-D**: UK NEQAS Standard
- **Patient 3: Anti-D**: titre 1 vs. R_1r cells
- **Patient 4: Inert**

Titres obtained by tube LISS suspension in the UK NEQAS laboratory on the closing date

ANTIBODY SCREEING

Patient 1 (anti-E+Fy^{a})

- One negative screen
  - IAT positive - data entry error (see discussion / learning point 1)

Patient 2 (anti-D – UK NEQAS Standard)

- One false negative screen
  - LISS tube IAT positive on repeat, and the cause of the original false negative has not been identified.
- All other laboratories detected the UK NEQAS anti-D standard
  - Reaction grades were similar to those seen the last time it was issued (11E5)

Patient 3 (anti-D)

- Detected by all - this was a lower dilution (i.e. stronger preparation) of the UK NEQAS anti-D Standard

ANTIBODY IDENTIFICATION

Patient 1 (anti-E+Fy^{a})

- All antibody identification errors were confirmed or probable transcription errors, made either prior to or during data entry. (see discussion / learning point 1)

Patients 2 and 3 (anti-D)

- Three reported anti-D+C^{w} for both patients (see discussion / learning points 2 & 3)
- One UI submission as anti-C^{w} could not be excluded, which, although unnecessary, was agreed (see discussion / learning point 2)

DISCUSSION AND LEARNING POINTS

1. The result transposition errors highlight the vulnerability of manual steps in antibody identification and transcription of results. Wherever possible, manual steps should be avoided in antibody screening; however, for antibody identification, manual intervention is sometimes inevitable and this should be taken into consideration when establishing procedures for reporting results for both clinical and EQA samples.
2. Since anti-C^w is rarely of clinical significance, there is no requirement to include a C^w positive cell on the antibody screening panel, or to exclude anti-C^w where it is potentially masked by other specificities in clinical[1] or EQA samples, providing that all reactions obtained are accounted for by specificities already identified.

DISCUSSION AND LEARNING POINTS (3)

Cell	Rh							MNS				P	Lu		Kell			Le		Fy		Jk		P2 Results	
	Probable Genotype	D	C	Cw	c	E	e	M	N	S	s	P1	a	b	K	k	Kpa	a	b	a	b	a	b	IAT	ENZ
1	$R_1^wR_1$	+	+	+	0	0	+	+	0	+	0	0	0	+	0	+	0	+	0	+	+	0	+	3	3
2	R_1R_1	+	+	0	0	0	+	+	+	0	+	+	0	+	+	+	0	0	+	0	+	+	0	3	3
3	R_2R_2	+	0	0	+	+	0	0	+	0	+	+	0	+	0	+	0	0	+	+	0	+	0	3	3
4	r'r	0	+	0	+	0	+	+	+	+	0	0	0	+	0	+	0	+	0	0	+	0	+	0	0
5	r''r	0	0	0	+	+	+	+	0	+	+	+	0	+	0	+	0	0	+	+	+	0	+	0	0
6	rr	0	0	0	+	0	+	+	0	+	0	+	0	+	0	+	0	0	0	0	+	+	+	0	0
7	rr	0	0	0	+	0	+	0	+	0	+	0	+	0	+	+	0	0	+	0	+	+	0	0	0
8	rr	0	0	0	+	0	+	+	+	0	+	0	0	+	0	+	0	+	0	+	0	0	+	0	0
9	rr	0	0	0	+	0	+	+	0	+	+	+	0	+	0	+	+	0	+	+	+	+	0	0	0
10	rr	0	0	0	+	0	+	+	0	+	0	+	0	+	+	+	0	0	+	0	+	0	+	0	0

Cell	Rh							MNS				P1	Kell			Le		Fy		Jk		P2
	Probable Genotype	D	C	Cw	c	E	e	M	N	S	s		K	k	Kpa	a	b	a	b	a	b	IAT
1	$R_1^wR_1$	+	+	+	0	0	+	+	0	+	0	0	0	+	0	+	0	0	+	0	+	3
2	R_2R_2	+	0	0	+	+	0	+	+	0	+	+	+	+	0	0	+	0	+	+	0	3
3	rr	0	0	0	+	0	+	0	+	+	0	+	0	+	+	0	+	+	0	+	0	0

- All specificities except for anti-D and anti-C^w can be excluded with a suitable cell
- P2 is reacting all D pos cells, more than one of which is C^w neg and not reacting with at least two D neg cells
  = Anti-D positively identified.
- Both C^w pos cells are also D pos so P2 could be reacting with the D antigen alone or with the D and C^w antigens
  = Anti-C^w not positively identified, but also not excluded.

No need to exclude Anti-C^w (see discussion / learning point 2)

FURTHER INFORMATION / REFERENCES

- Contact UK NEQAS BTLP
  - btlp@ukneqas.org
  - 0044 (0) 1923 217933 (Tel)
  - 0044 (0) 1923 217934 (Fax)

- [1]BCSH guidelines for pre-transfusion compatibility testing in blood transfusion laboratories (2012).

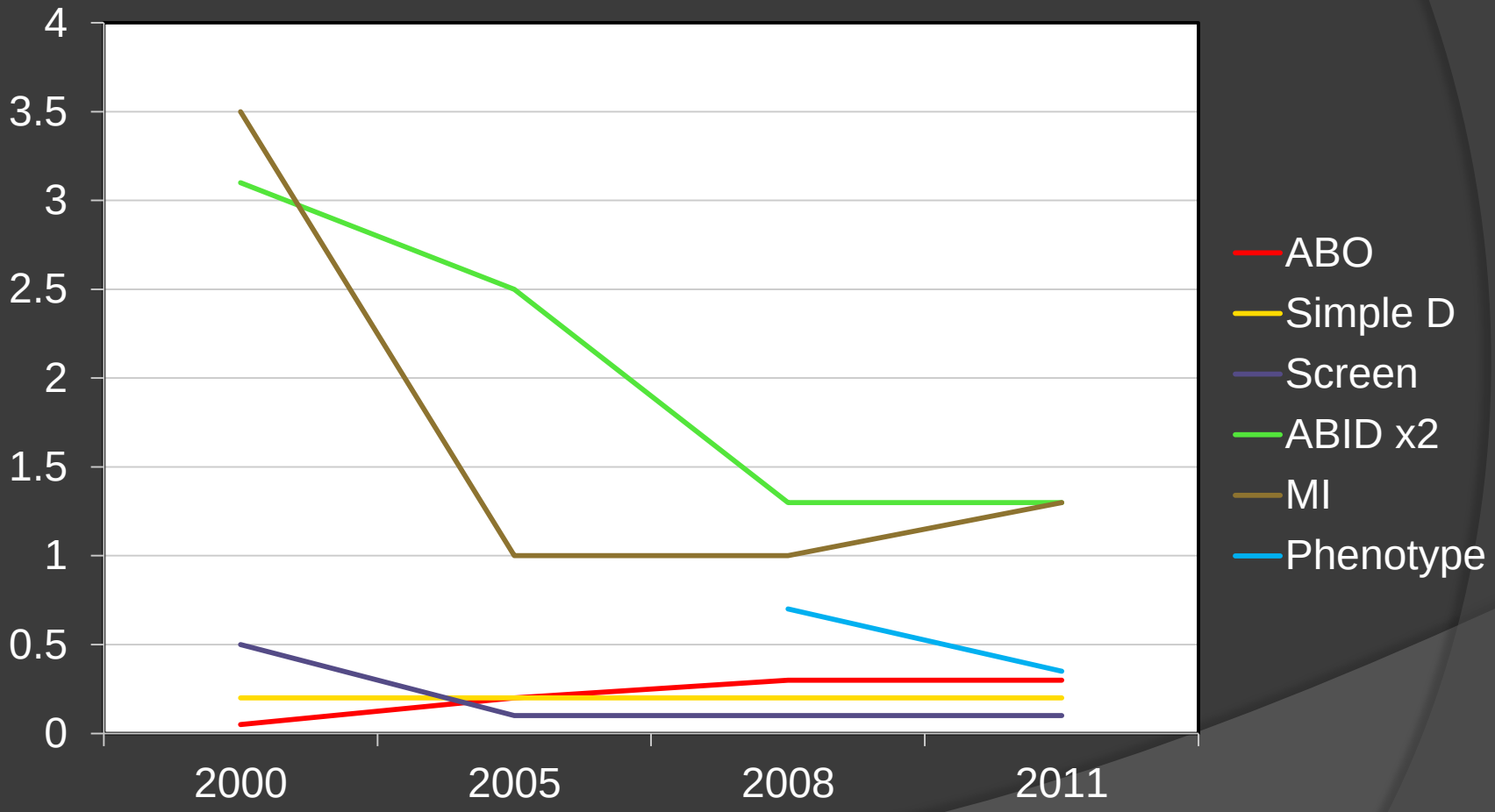
  Now available for download at www.bcshguidelines.com

Is this useful?

Future developments
Molecular genotyping

- Need to assess market for this in UK and non-UK
  - Number of centres
- Range of antigens
- Donors/patients
- Reference labs/hospitals
- Material
  - Whole blood
  - DNA

UK NEQAS error rates



Acknowledgements

- Megan Rowley
- Jenny White
- Arnold Mavurayi
- Bill Chaffe
- The admin team
- The logistics team
- IT team
- Steering Committee
- Participants