



Objectives

- Identify and distinguish the four major types of ABO discrepancies
- Identify the causes of the four major types of ABO discrepancies
- Identify and understand strategies helpful in resolving ABO discrepancies
- Case study investigations

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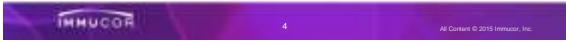
ABO Discrepancies

- Clerical errors
 - Inadequate ID of specimen, test tubes, or reagents
 - Documentation/computer entry
- Technical errors
 - Cell suspension
 - Missed observations (hemolysis, rouleaux, etc.)
 - Failure to add reagents or sample
 - Failure to follow manufacturer's instructions
 - Equipment
 - Reagents
 - Environment

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Type I

- Reverse type
 - Weak or missing reactions (antibodies)
 - Depressed antibody production
 - Inability to produce ABO antibodies
- Causes:
 - Age
 - Disease
 - Drugs or therapy
 - Rare causes



Resolution of Type I Discrepancies

- Patient History
- Enhance the weak or missing reaction
 - Autocontrol and O cell control



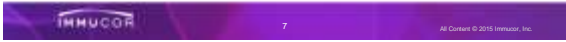
Type II

- Reverse Type
 - Unexpected positive reactions (antibody vs. pseudoagglutination)
 - Increased antibody production
- Causes:
 - Disease
 - Drugs
 - Antibodies (ABO vs. non-ABO)



Resolution of Type II Discrepancies

- Patient History
- Pseudoagglutination
 - Saline replacement technique
 - Washing patient red blood cells
- Agglutination caused by antibody
 - Unexpected ABO isoagglutinins
 - Unexpected non-ABO antibodies
 - Cold reactive autoantibodies



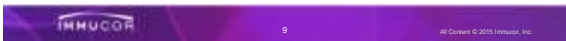
Type III

- Forward type
 - Unexpected positive reactions (extra antigen)
 - Increased antigen production
- Causes:
 - ABO subgroup
 - Chimerism
 - Disease



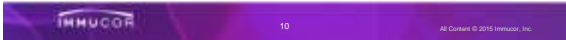
Resolution of Type III Discrepancies

- Patient History
- Remove unexpected reactivity (Acquired B)
- Reagents



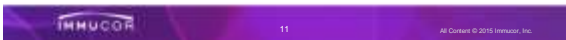
Type IV

- Forward type
 - Weak reactions
 - Missing antigens
- Causes:
 - ABO Subgroup
 - Disease



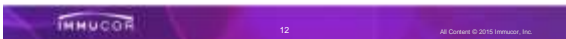
Resolution of Type IV Discrepancies

- Patient History
- Enhance the weak or missing reaction
 - Autocontrol and O cell control



Case Study 1

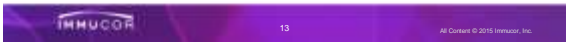
Anti-A	Anti-B	A1 Cells	B Cells
0	0	1+	w+



Case Study 1

After 15 minute room temperature incubation:

Anti-A	Anti-B	Anti-A,B	Anti-A1	A1 Cells	B Cells	O Cells	Auto Control
0	0	0	0	2+	2+	0	0



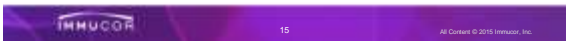
Case Study 2

Anti-A	Anti-B	A1 Cells	B Cells
1+	4+	4+	2+



Case Study 2

Anti-A	Anti-B	Anti-A,B	Anti-A1	A1 Cells	B Cells	O Cells	Auto Control
1+	4+	4+	1+	4+	2+	2+	2+



Case Study 2

After washing red blood cells with saline and saline replacement in back type:

Anti-A	Anti-B	Anti-A,B	Anti-A1	A1 Cells	B Cells	O Cells	Auto Control
0	4+	4+	0	4+	0	0	0



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Case Study 3

Anti-A	Anti-B	A1 Cells	B Cells
3+	1+	0	4+



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Case Study 3

Anti-A	Anti-B	Anti-A,B	Anti-A1	A1 Cells	B Cells	O Cells	Auto Control
3+	1+	3+	3+	0	4+	0	0



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Case Study 4

Anti-A	Anti-B	A1 Cells	B Cells
0	0	2+	4+

Case Study 4

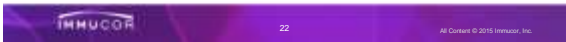
Anti-A	Anti-B	Anti-A,B	Anti-A1	A1 Cells	B Cells	O Cells	Auto Control
0	0	W+	0	2+	4+	0	0

Case Study 5

Anti-A	Anti-B	A1 Cells	B Cells
0	4+	4+	3+

Case Study 5

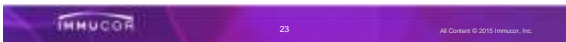
Anti-A	Anti-B	Anti-A,B	Anti-A1	A1 Cells	B Cells	O Cells	Auto Control
0	4+	4+	0	4+	3+	3+	0



Case Study 5

Immediate spin results for 3-cell screen:

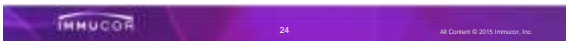
Cell	D	C	E	F	K	Fy ^a	Fy ^b	Jk ^a	Jk ^b	M	N	S	s	Lu ^a	Lu ^b	P ₁	P ₂	
I	+	+	0	0	+	0	0	+	0	+	+	+	0	+	0	+	+	2+
II	+	0	+	+	0	+	+	0	+	0	+	+	+	+	+	0	+	0
III	0	0	+	0	+	0	+	0	+	0	+	0	+	0	0	+	+	3+
Auto																		0



Case Study 5

Antigen negative reverse typing cells:

Cell	D	C	E	F	K	Fy ^a	Fy ^b	Jk ^a	Jk ^b	M	N	S	s	Lu ^a	Lu ^b	P ₁	P ₂	
I	+	+	0	0	+	0	0	+	0	+	+	+	0	+	0	+	+	2+
II	+	0	+	+	0	+	+	0	+	0	+	+	+	+	+	0	+	0
III	0	0	+	0	+	0	+	0	+	0	+	0	+	0	0	+	+	3+
Auto																		0
A1 Cells										0								4+
B Cells										0								0



In Summary

- Identified and distinguished the four major types of ABO discrepancies
- Identified the causes of the four major types of ABO discrepancies
- Identified strategies helpful in resolving ABO discrepancies
- Reviewed case studies

