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## ***HTLA Antibodies: Identification and Management Strategies and Case Studies***

Wednesday, April 17, 2013

2:00 p.m. – 3:30 p.m. (ET) / 6:00p.m.-7:30 p.m. (GMT)

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# HTLA Antibodies: Identification and Management Strategies and Case Studies



# HTLA Antibodies

## Objective

- Describe the typical serological characteristics of HTLA antibodies
- Discuss common antibodies associated with HTLA-like activity
- Identify the challenges faced when identifying HTLA-like antibodies and approaches to transfusion



# What are HTLA antibodies?

- Historically, antibodies that have been grouped together based on similar characteristics.
- More often, these antibodies are referred to as HTLA-like antibodies. The specificity of these antibodies can often be determined.



# HTLA- High Titer Low Avidity

- High Titer

Reactivity continues to be observed at high dilutions

- Low Avidity

Weak reactivity due to weak bonds



# Common Characteristics of HTLA-like Antibodies

- Weak, nebulous activity
- Diluted serum reacts
- Reactivity may be difficult to reproduce
- Antibodies to high frequency antigens



# Common Characteristics of HTLA-like Antibodies

- Some are neutralizable with pooled serum or plasma
- Do *not* adsorb well onto red cells



# Common Characteristics of HTLA-like Antibodies

- Not usually considered to be clinically significant
  - Transfusion reactions are not seen when “least incompatible blood is transfused
  - Post transfusion, a positive DAT may be observed; however, there is no evidence that red cell clearance is accelerated



# Why are HTLA-like antibodies important?

- Mask underlying clinically significant antibodies
- Some clinically significant antibodies have HTLA-like characteristics



# HTLA-like Antibodies

- Usually have HTLA-like characteristics:
  - Cs<sup>a</sup>
  - Knops system
  - Chido/Rodgers
  - JMH
- Sometimes have HTLA-like characteristics
  - Gy<sup>a</sup>, Hy, Jo<sup>a</sup>

(Issit & Anstee, 1998)



# HTLA-like Antibodies

Some of these antibodies can have HTLA-like characteristics

- Ge2, Ge3
- Lu<sup>b</sup>
- Yt<sup>a</sup>
- Fy3
- Co<sup>a</sup>
- Di<sup>b</sup>
- In<sup>b</sup>
- Vel

(Issit & Anstee, 1998)



# Challenges with Antibody Identification and HTLA-like Antibodies

- Weak reactivity
- Not reproducible
- Mask clinically significant antibodies
- May be a clinically significant antibody has HTLA-like characteristics
- Reacts with the majority of red cells



	Rh						MNS				P	Lewis		Kell	Duffy		Kidd			IS	LISS 37C	LISS AGT	
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
1	+	+	0	0	+	0	0	+	+	+	+	+	0	+	+	+	+	+	+		0	0	W+
2	+	0	+	+	0	0	+	0	+	0	0	0	+	0	+	0	+	+	0		0	0	W+
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+		0	0	1+
4	+	+	0	0	+	0	+	+	0	+	0	+	0	+	+	0	+	+	+		0	0	W+
5	+	0	+	+	0	0	0	+	+	+	+	+	0	0	+	+	+	0	+		0	0	1+
6	0	0	0	+	+	+	+	+	+	+	+	0	+	0	+	0	+	+	0		0	0	W+
7	0	0	0	+	+	+	+	0	0	+	+	+	0	0	+	+	+	+	+		0	0	0√

Weak reactions, no apparent specificity, most of the cells react....what are the possibilities?

Multiple antibodies

High Frequency antibody

HTLA-like antibody



# What Tools Can Be Used Perform Antibody Identification?

- Patient history
- Red Cell Phenotype
- Test with other enhancement media
- Titration Studies
- Enzymes/Chemicals
- Neutralization Studies



- Patient History
  - Has the patient been transfused or pregnant?
  - High frequency negative individuals are more prevalent in certain populations
  
- Red Cell Phenotype
  - Determine what antibodies the patient can make
  - Testing a phenotypically similar reagent red cell can give additional information



# Test with Other Enhancement Media

HTLA-like antibodies often react have the same reactivity strength regardless of what enhancement media is used or not used.

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd			AGT	LISS AGT	PEG AGT
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
1	+	+	0	0	+	0	0	+	+	+	+	+	0	+	+	+	+	+	+		W+	W+	W+
2	+	0	+	+	0	0	+	0	+	0	0	0	+	0	+	0	+	+	0		W+	W+	W+
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+		1+	1+	1+
4	+	+	0	0	+	0	+	+	0	+	0	+	0	+	+	0	+	+	+		W+	W+	W+
5	+	0	+	+	0	0	0	+	+	+	+	+	0	0	+	+	+	0	+		1+	1+	1+
6	0	0	0	+	+	+	+	+	+	+	+	0	+	0	+	0	+	+	0		W+	W+	W+
7	0	0	0	+	+	+	+	0	0	+	+	+	0	0	+	+	+	+	+		0√	0√	0√



# Titration Studies

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd			AGT	LISS AGT	PEG AGT
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
1	+	+	0	0	+	0	0	+	+	+	+	+	0	+	+	+	+	+	+		1+	1+	1+

1:2	1:4	1:8	1:16	1:32	1:64	1:128	1:256	1:512	1:1024
1+	W+	W+	M+	M+	M+	M+	0√	0√	0√

- Perform titration with a phenotypically similar red cell
- Weak reactivity will be observed at high dilutions



# Enzymes/Chemicals

Can be used to enhance or destroy antigens

Reactivity patterns with different enzymes or chemicals can help distinguish specificity

## **Ficin**

Destroys M, N, S, s, Fy<sup>a</sup>, Fy<sup>b</sup>, Ch, Rg, Ge2, Indian, JMH, Yt<sup>a</sup>

## **Dithiothreitol (DTT)**

Destroys Indian, JMH, Yt<sup>a</sup>, Kell, LW, Scianna, *Knops*, *Cromer*, *Lutheran*, *Dombrock*



# Neutralization Studies

Pooled serum or plasma can neutralize reactivity of some HTLA-like antibodies.

																					Untreated	AB Neutralize	Dilution Control
	Rh					MNS					P	Lewis		Kell		Duffy		Kidd		LISS AGT	LISS AGT	LISS AGT	
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
1	+	+	0	0	+	0	0	+	+	+	+	+	0	+	+	+	+	+	+	+	W+	0√	W+
2	+	0	+	+	0	0	+	0	+	0	0	0	+	0	+	0	+	+	0	0	W+	0√	W+
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+	0	1+	0√	1+



# Transfusion of Patients with HTLA-like Antibodies

Depends on:

- Clinical condition of patient. How quickly does the patient need transfused?
- Can the antibody specificity be determined? Does the patient need antigen negative blood?



# Transfusion of Patients with HTLA-like Antibodies

## Options:

- Antigen negative blood if indicated (based on antibody specificity)
- Phenotypically similar, crossmatch compatible, and/or least incompatible units
- Monocyte Monolayer Assay Testing



# Case Study #1

- Female, 56 years old
- Hemoglobin=7.4 g/dL
- Scheduled for outpatient transfusion of one unit when available
- No previous transfusion history, three pregnancies



# Case Study #1

A, Rh positive

Positive Antibody Screen

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd		IS	LISS 37C	LISS AGT	
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
1	+	+	0	0	+	0	0	+	+	+	+	+	0	+	+	+	+	+	+		0	0	W+
2	+	0	+	+	0	0	+	0	+	0	0	0	+	0	+	0	+	+	0		0	0	0√
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+		0	0	M+
4	+	+	0	0	+	0	+	+	0	+	0	+	0	+	+	0	+	+	+		0	0	W+
5	+	0	+	+	0	0	0	+	+	+	+	+	0	0	+	+	+	0	+		0	0	1+
6	0	0	0	+	+	+	+	0	+	+	+	0	+	0	+	0	+	+	0		0	0	W+
7	0	0	0	+	+	+	+	0	0	+	+	+	0	0	+	+	+	+	+		0	0	0√
																				AC	0	0	0√



# Case Study #1

The patient's red cell phenotype was found to be:

Positive for: E, c, e, M, N, S, s, P<sub>1</sub>, Fy<sup>a</sup>, Fy<sup>b</sup>, Jk<sup>b</sup>

Negative for: C, K, Jk<sup>a</sup>

*Was a phenotypically similar cell tested?*

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd			IS	LISS 37C	LISS AGT
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+		0	0	M+
5	+	0	+	+	0	0	0	+	+	+	+	+	0	0	+	+	+	0	+		0	0	1+

The doctor's office was closed for the evening and the patient could not be reached for additional information on ethnic background.



# Case Study #1

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd			AGT	LISS AGT	PEG AGT
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
5	+	0	+	+	0	0	0	+	+	+	+	+	0	0	+	+	+	0	+		0	0	1+

	1:2	1:4	1:8	1:16	1:32	1:64	1:128	1:256	1:512	1:1024
	W+	W+	M+	M+	M+	0√	0√	0√	0√	0√



# Case Study #1

## Different Enhancement Media

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd		AGT	LISS AGT	PEG AGT	
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
1	+	+	0	0	+	0	0	+	+	+	+	+	0	+	+	+	+	+	+		W+	W+	W+
2	+	0	+	+	0	0	+	0	+	0	0	0	+	0	+	0	+	+	0		0√	0√	0√
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+		M+	M+	0√
4	+	+	0	0	+	0	+	+	0	+	0	+	0	+	+	0	+	+	+		W+	W+	W+
5	+	0	+	+	0	0	0	+	+	+	+	+	0	0	+	+	+	0	+		1+	1+	1+
6	0	0	0	+	+	+	+	0	+	+	+	0	+	0	+	0	+	+	0		W+	W+	W+
7	0	0	0	+	+	+	+	0	0	+	+	+	0	0	+	+	+	+	+		0√	0√	0√
																				AC	0√	0√	0√



# Case Study #1

## Ficin and DTT red cells

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd		AGT	Ficin AGT	DTT-treated Cells LISS AGT	
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
1	+	+	0	0	+	0	0	+	+	+	+	+	0	+	+	+	+	+	+	+	W+	0√	W+
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+	+	M+	0√	M+
4	+	+	0	0	+	0	+	+	0	+	0	+	0	+	+	0	+	+	+	+	W+	0√	W+
5	+	0	+	+	0	0	0	+	+	+	+	+	0	0	+	+	+	0	+	+	1+	0√	1+
6	0	0	0	+	+	+	+	0	+	+	+	0	+	0	+	0	+	+	+	0	W+	0√	W+

- Antibody is to an antigen destroyed by ficin, but not by DTT
- Titers to a dilution of 32
- Reacts similar with PEG, LISS, or without enhancement media



# Case Study #1

## Neutralization Studies

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd		LISS AGT	AB Neutralized LISS AGT	Dilution Control LISS AGT	
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
1	+	+	0	0	+	0	0	+	+	+	+	+	0	+	+	+	+	+	+	+	W+	0√	W+
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+	+	M+	0√	M+
4	+	+	0	0	+	0	+	+	0	+	0	+	0	+	+	0	+	+	+	+	W+	0√	W+
5	+	0	+	+	0	0	0	+	+	+	+	+	0	0	+	+	+	0	+	+	1+	0√	1+
6	0	0	0	+	+	+	+	0	+	+	+	0	+	0	+	0	+	+	+	0	W+	0√	W+

- Neutralized by AB Serum
- Ruled out clinically significant alloantibodies
- Antibody to Chido or Rodgers antigen



# Case Study #1

Which unit should be transfused?

	IS	LISS 37C	LISS AGT
Unit A C-, K-, JK(a-)	0	0	1+
Unit B, C-, K-, JK(a-)	0	0	M+
Unit C	0	0	0√
Unit D	0	0	M+
Unit E	0	0	M+



# Case Study #2

- Female, 27 years old
- Hemoglobin=11.5 g/dL
- Routine Prenatal Antibody Screen
- Two previous pregnancies, all previous antibody screens were negative
- No transfusion history



# Case Study #2

O, Rh negative

Positive Antibody Screen

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd		IS	LISS 37C	LISS AGT	
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
1	+	+	0	0	+	0	0	+	+	+	+	+	0	+	+	+	+	+	+		0	0	1+
2	+	0	+	+	0	0	+	0	+	0	0	0	+	0	+	0	+	+	0		0	0	1+
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+		0	0	1+
4	+	+	0	0	+	0	+	+	0	+	0	+	0	+	+	0	+	+	+		0	0	1+
5	+	0	+	+	0	0	0	+	+	+	+	+	0	0	+	+	+	0	+		0	0	1+
6	0	0	0	+	+	+	+	0	+	+	+	0	+	0	+	0	+	+	0		0	0	1+
7	0	0	0	+	+	+	+	0	0	+	+	+	0	0	+	+	+	+	+		0	0	1+
																				AC	0	0	0√



# Case Study #2

## Different Enhancement Media

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd		PEG AGT	
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>		
1	+	+	0	0	+	0	0	+	+	+	+	+	0	+	+	+	+	+	+	1+	
2	+	0	+	+	0	0	+	0	+	0	0	0	+	0	+	0	+	+	0	1+	
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+	1+	
4	+	+	0	0	+	0	+	+	0	+	0	+	0	+	+	0	+	+	+	1+	
5	+	0	+	+	0	0	0	+	+	+	+	+	0	0	+	+	+	0	+	1+	
6	0	0	0	+	+	+	+	0	+	+	+	0	+	0	+	0	+	+	0	1+	
7	0	0	0	+	+	+	+	0	0	+	+	+	0	0	+	+	+	+	+	1+	
																				AC	0√



# Case Study #2

## Second antibody panel

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd		IS	LISS 37C	LISS AGT	
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
1	+	+	0	0	+	0	0	+	+	+	+	+	0	+	+	+	+	+	+		0	0	W+
2	0	0	+	+	+	+	+	0	+	0	0	+	0	0	+	0	0	+	0	Js(a-)	0	0	1+
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+		0	0	1+
4	+	+	0	0	+	0	+	+	0	+	0	0	0	+	+	+	+	+	+	Kp(a-)	0	0	1+
5	+	0	+	+	0	0	0	+	+	+	+	+	0	0	+	+	+	0	+		0	0	1+
6	0	0	0	+	+	+	+	0	0	0	+	0	+	0	+	0	0	+	0	U-	0	0	1+
7	0	0	0	+	+	+	+	0	0	+	+	+	0	0	+	+	+	0	+	Ch-	0	0	1+



# Case Study #2

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd			AGT	LISS AGT	PEG AGT
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+		0	0	1+

1:2	1:4	1:8	1:16	1:32	1:64	1:128	1:256	1:512	1:1024
1+	1+	M+	M+	0√	0√	0√	0√	0√	0√

Sent to a Reference Lab for further investigation



# Case Study #2

- Reactivity was observed with both ficin-treated and DTT-treated red cells.
- Molecular Red Cell Phenotyping was performed, and the patient was determined to be Lu(b-) by molecular methods
- The Reference Lab determined the patient had anti-Lu<sup>b</sup>



# Case Study #2

- How should the patient be transfused?
- Is there a risk of HDN?



# Case Study #3

- Male, 72 years old
- Hemoglobin=10.5 g/dL
- Broken hip, scheduled for surgery in the morning
- Transfused 6 years ago following open heart surgery. Antibody screen was negative at that time.



# Case Study #3

AB, Rh positive

Positive Antibody Screen

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd		IS	LISS 37C	LISS AGT	
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
1	+	+	0	0	+	0	0	+	+	+	+	+	0	+	+	+	0	+	+		0	0	W+
2	+	0	+	+	0	0	+	0	+	0	0	0	+	0	+	0	+	+	0		0	0	2+
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+		0	0	M+
4	+	+	0	0	+	0	+	+	0	+	0	+	0	+	+	0	+	+	+		0	0	W+
5	+	0	+	+	0	0	0	+	+	+	+	+	0	0	+	+	+	0	+		0	0	2+
6	0	0	0	+	+	+	+	0	+	+	+	0	+	0	+	0	+	+	0		0	0	W+
7	0	0	0	+	+	+	+	0	0	+	+	+	0	0	+	+	+	+	+		0	0	M+
																				AC	0	0	0√



# Case Study #3

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd		LISS AGT	Ficin AGT	DTT LISS AGT	
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
1	+	+	0	0	+	0	0	+	+	+	+	+	0	+	+	+	0	+	+		W+	0√	0√
2	+	0	+	+	0	0	+	0	+	0	0	0	+	0	+	0	+	+	0		2+	2+	2+
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+		M+	0√	0√
4	+	+	0	0	+	0	+	+	0	+	0	+	0	+	+	0	+	+	+		W+	0√	0√
5	+	0	+	+	0	0	0	+	+	+	+	+	0	0	+	+	+	0	+		2+	2+	2+
6	0	0	0	+	+	+	+	0	+	+	+	0	+	0	+	0	+	+	0		W+	0√	0√
7	0	0	0	+	+	+	+	0	0	+	+	+	0	0	+	+	+	+	+		M+	0√	0√



# Case #3

- The patient's red cells were phenotyped

Positive: C, e, K, k, M, N, S, s, Fy<sup>a</sup>, Jk<sup>a</sup>, Jk<sup>b</sup>, Le<sup>b</sup>, P<sub>1</sub>

Negative: E, c, Fy<sup>b</sup>, Le<sup>a</sup>

- Reactivity was observed to a dilution of 64 with a phenotypically similar cell.



# Case Study #3

## Phenotypically similar red cells

	Rh						MNS				P	Lewis		Kell	Duffy		Kidd			IS	LISS 37C	LISS AGT	
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
1	+	+	0	0	+	0	0	+	0	+	+	0	+	+	+	+	0	+	+		0	0	W+
2	+	0	0	+	+	0	+	+	+	0	0	0	+	0	+	+	0	+	+		0	0	W+
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+		0	0	M+
																Unit A Unit B, E-, c-, Fy(b-)			0	0	W+		
																Unit B, E-, c-, Fy(b-)			0	0	W+		
																Unit B, E-, c-, Fy(b-)			0	0	M+		

In addition, similar reactivity was observed when testing was performed LISS, PEG, or without enhancement media



# Case Study #3

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd		IS	LISS 37C	LISS AGT	
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
1	+	+	0	0	+	0	0	+	0	+	+	0	+	+	+	+	0	+	+	Yt(a-)	0	0	0√
2	+	+	0	0	+	0	+	+	+	0	0	0	+	0	+	+	0	+	+	Yt(a-)	0	0	0√
3	+	+	0	0	+	0	+	0	0	+	+	0	0	0	+	+	0	0	+	JMH-	0	0	M+

- The patient's red cells phenotyped Yt(a-)
- What units should be crossmatched for surgery?
- Should MMA testing be performed?



# Case Study #4

- Male, 56 years old
- Hemoglobin=12.5 g/dL
- MVA, trauma,actively bleeding
- Transfused two units of O, Rh positive units on the way to the hospital
- Want 4 units ASAP



# Case Study #4

O, Rh positive

Positive Antibody Screen

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd		IS	LISS 37C	LISS AGT	
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
1	+	+	0	0	+	0	0	+	+	+	+	+	0	+	+	+	+	+	+		0	0	W+
2	+	0	+	+	0	0	+	0	+	0	0	0	+	0	+	0	+	+	0		0	0	W+
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+		0	0	M+
4	+	+	0	0	+	0	+	+	0	+	0	0	+	+	+	0	+	+	+		0	0	0√
5	+	0	+	+	0	0	0	+	+	+	+	+	0	0	+	+	0	+		0	0	0√	
6	0	0	0	+	+	+	+	0	+	+	+	0	+	0	+	0	+	+	0		0	0	W+
7	0	0	0	+	+	+	+	0	+	0	+	+	0	0	+	0	+	0		0	0	0√	
																				AC	0	0	0√



# Case Study #4

## Second antibody panel

	Rh						MNS				P	Lewis		Kell		Duffy		Kidd		IS	LISS 37C	LISS AGT	
	D	C	E	c	e	f	M	N	S	s	P <sub>1</sub>	Le <sup>a</sup>	Le <sup>b</sup>	K	k	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>				
1	+	+	0	0	+	0	0	+	+	+	+	+	0	+	+	+	+	+	+		0	0	0√
2	0	0	+	+	+	+	+	0	+	0	0	+	0	0	+	0	0	+	0		0	0	W+
3	0	0	0	+	+	+	+	0	0	+	+	0	0	0	+	+	0	0	+		0	0	1+
4	+	+	0	0	+	0	+	+	0	+	0	0	0	+	+	+	+	+	+		0	0	1+
5	+	0	+	+	0	0	+	+	+	+	+	+	0	+	0	+	+	0	+		0	0	0√
6	0	0	0	+	+	+	+	0	0	0	+	0	+	0	+	0	0	+	0		0	0	1+
7	0	0	0	+	+	+	+	0	0	+	+	+	0	0	+	+	+	0	+		0	0	0√



# Case Study #4

	IS	LISS 37C	LISS AGT
Unit A	0	0	1+
Unit B	0	0	M+
Unit C	0	0	0√
Unit D	0	0	M+
Unit E	0	0	M+
Unit F	0	0	1+



# Case Study #4

	1:2	1:4	1:8	1:16	1:32	1:64	1:128	1:256	1:512	1:1024
	W+	W+	M+	M+	M+	0√	0√	0√	0√	0√

- Similar reactivity with PEG testing
- Resources are not available for further investigation at the hospital.
- What should be done?
- How should the patient be transfused?



# HTLA-like Antibodies

- Not usually considered to be clinically significant
- Some are neutralizable with pooled serum or plasma
- Do *not* adsorb well onto red cells.
- Mask underlying clinically significant antibodies
- Some clinically significant antibodies have HTLA-like characteristics



# Important Investigation Tools

- Patient history
- Red Cell Phenotype
- Test with other enhancement media
- Titration Studies
- Enzymes/Chemicals
- Neutralization Studies



# Transfusion of Patient's with HTLA-like antibodies

- Antigen negative
- Phenotypically similar
- Crossmatch compatible
- Crossmatch least incompatible
- MMA testing
- Clinical situation of the patient



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# Any Questions?

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