MUST TO KNOW IN IMMUNOHEMATOLOGY (BLOOD BANKING)			
ISBT 001	ABO		
ISBT 002	MNS		
ISBT 003	P		
ISBT 004	Rh		
ISBT 005	Lutheran		
ISBT 006	Kell		
ISBT 007	Lewis		
ISBT 008	Duffy		
ISBT 009	Kidd		
ISBT 010	Diego		
ISBT 011	Cartwright		
ISBT 012	Xg		
ISBT 013	Scianna		
ISBT 014	Dombrock		
ISBT 015	Colton		
ISBT 016	Landsteiner-Weiner		
ISBT 017	Chido/Rodgers		
ISBT 018	Н		
ISBT 019	Кх		
ISBT 020	Gerbich		
ISBT 021	Cromer		
ISBT 022	Knops		
ISBT 023	Indian		
Chromosome 1	Rh		
	Duffy		
	Scianna		
ani	Scianna		
previ	Scianna Chomer Knops D 3 0 0		
Chromosome Previ	Scianna Chomer Knops D 3 Q Gerbich		
Chromosome 4	Scianna Chomer Knops D 3 Q Gerbich MNS		
Chromosome 4 Chromosome 6	Scianna Chomer Knops Dage Gerbich MNS Chido/Rodgers		
Chromosome 4 Chromosome 6 Chromosome 7	Scianna Chomer Knops Gerbich MNS Chido/Rodgers Cartwright		
Chromosome 4 Chromosome 4 Chromosome 6 Chromosome 7	Scianna Chomer Knops D 20 Gerbich MNS Chido/Rodgers Cartwright Colton		
Chromosome 4 Chromosome 4 Chromosome 6 Chromosome 7	Sciană Chomer Knops D 20 Gerbich MNS Chido/Rodgers Cartwright Colton Kell		
Chromosome 4 Chromosome 4 Chromosome 6 Chromosome 7 Chromosome 9	Sciană Knops D 30 Gerbich MNS Chido/Rodgers Cartwright Colton Kell ABO		
Chromosome 4 Chromosome 4 Chromosome 6 Chromosome 7 Chromosome 9 Chromosome 11	Sciană Chomer Knops D 20 Gerbich MNS Chido/Rodgers Cartwright Colton Kell ABO Indian		
Chromosome 4 Chromosome 4 Chromosome 6 Chromosome 7 Chromosome 9 Chromosome 11 Chromosome 17	Sciană Chomer Knops D 20 Gerbich MNS Chido/Rodgers Cartwright Colton Kell ABO Indian Diego		
Chromosome 4 Chromosome 4 Chromosome 6 Chromosome 7 Chromosome 9 Chromosome 11 Chromosome 17 Chromosome 18	Sciană Knops D 30 Gerbich MNS Chido/Rodgers Cartwright Colton Kell ABO Indian Diego Kidd		
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	(-) C' binding = extravascu	ılar hemolysis (delayed HTF	<u>{)</u>	
Rh HDN	Mother: Rh (-)			
	Child: Rh (+), 2 <sup>nd</sup> pregnand	су		
RhoGam or RhIg	Purified anti-D			
	Administer w/in 72 hrs af	ter 1 <sup>st</sup> delivery		
Full dose RhoGam	300 μg anti-D	×		
(>12 weeks gestation)	Protect up to 30mL D+ WI	B or 15mL D+ RBCs		
Minidose/Microdose	50 μg anti-D			
RhoGam	Protect up to 5mL of D+ WB or 2.5mL D+ RBCs			
(<12 weeks gestation)	Ex. Abortion			
# RhIg vials	Volume of FMH (mL) ÷ 30			
	Vol. FMH = $\%$ fetal cells x 50			
	$x = (\%$ Fetal cells x 50) $\div$ 3	30		
	$x \approx \_ + 1 = #$ RhIg vials			
As little as 1mL Rh(+) RBC	Produces anti-D			
Rh+	RBCs + anti-D = (+) agglutination			
Perform test for D <sup>u</sup> (IAT)	If RBCs + anti-D = (-) agglutination			
	= IAT is (+) agglutination =	= +D <sup>u</sup> (weak D)		
Rh-	RBCs + anti-D + AHG reagent = (-) agglutination			
2 conditions wherein an	1. No prior exposure to D	Ag (males) or past childbear	ring age (females)	
Rh- pt. can be transfused	2. Administer RhoGam		IN I	
w/Rh+blood				
Anti-LW	Originally identified as an	ti-Rh in early experiments in	nvolving rabbits	
(Landsteiner-Weiner)	immunized w/ Rhesus no	nev toou	C	
	Anti-LW agglutin nes Lh	and Rh- cells except Rh <sub>null</sub> c	ells	
Rh <sub>null</sub>	No Rh g			
	Designated as/			
<u>nrevi</u>	Stomatocytes			
Rh <sub>deleted</sub>	No C/c and L/e Ag			
-	Designated as D/D			
Lewis system	Le gene codes for the production of fucosyltransferase enzyme that catalyzes			
	addition of fucose to the 4 <sup>th</sup> C of N-acetylglucosamine of type 1 precursor			
Lewis Ag's	$Le^a(Se)> Le^b$			
	Produced by tissue cells			
	<u>Not</u> well developed at birth = NB/cord cells = Le(a-b-)			
	Decreased expression during pregnancy			
Genotype	Substances (Secretion)	Phenotype	Le Ab's	
ABH, lele, sese	None	ABH, Le(a-b-)	Anti-Le <sup>a</sup> & Anti-Le <sup>b</sup>	
ABH, lele, SeSe/Sese	ABH	ABH, Le(a-b-)	Anti-Le <sup>a</sup> & Anti-Le <sup>b</sup>	
ABH, LeLe/Lele, sese	Lea	ABH, Le(a+b-)	Anti-Le <sup>b</sup>	
ABH, LeLe/Lele, SeSe/Sese	ABH, Le <sup>a</sup> , Le <sup>b</sup>	ABH, Le(a-b+)	none	
Lewis Ab's	Anti-Le <sup>a</sup> & Anti-Le <sup>b</sup>			
	Naturally occurring			
	IgM			
	Activates the C'			
MN Ag's	Glycophorin A (MN-SGP)			
	M = <u>Ser</u> -Ser-Threo- <u>Gly</u>			
	N = <u>Leu</u> -Ser-Threo- <u>Glu</u>			
	Well developed at birth			
	Important in <u>paternity testing</u>			
Anti-M	IgM, pH-dependent (6.5), glucose-dependent			

	c. Patients w/ cardiac disease		
	Prevention: Therapy		
	a. Therapeutic phlebotomy		
	b. IV diuretics		
	c. $O_2$ therapy		
Bacterial contamination	Cause: Endotoxin production by psychrophilic/cryophilic bacteria		
	<i>Y. enterocolitica</i> (most common)		
	E. coli		
	P. aeruginosa		
	Factors:		
	a. During phlebotomy		
	b. During preparation/processing		
	c. During thawing		
	Prevention:		
	a. Sterile technique		
	b. Visual inspection of unit		
	$\rightarrow$ Blood unit = Brown, purple, hemolysis, clot		
	$\rightarrow$ Plasma = <u>Murky</u> (dark brown) purple, red		
PCITR	Causes:		
	- Small bore needle		
	- Warming blood above 50'C		
	- Freezing blood w/o cryoprotective agent		
	- Citrate toxicity		
	Delayed Nonimmune Transfusion Maryons		
Iron Overload	Patients w/ normovolemic and a start of the		
(Hemosiderosis)	Transfusion-depender constients:		
	- Aplasticateria		
	- Ongenital nemolyticum mia		
Prevention:			
Drev.	a. Iron Plea i., agent = Deferroxamine		
• • •	b. Neocytes = young RBCs, has longer lifespan		
Disease transmission	HBV, HCV, HDV, CMV, EBV, HTLV-I and II, HIV, T. pallidum, Plasmodium spp., B.		
	microti, T. cruzi, T. gondii		
	Hemolytic Disease of the Newborn		
In utero	Anemia ( $\uparrow$ immature RBCs, enlarged spleen & liver = extramedullary		
	hematopoiesis)		
	<u>Hydrops fetalis</u> = cardiac insufficiency, edema		
Neonatal period	↑ Unconjugated bilirubin → Brain → Kernicterus		
Treatment	1. Intrauterine transfusion		
	- In utero		
	- Corrects anemia		
	- X-match: Mother's serum		
	2. Exchange transfusion		
	- Neonatal period		
	- Removes bilirubin & Ab-coated RBCs		
	- X-match: <u>Mother's serum</u> (preferred) or infant's serum		
	Cross-Matching		
Full X-match	2 hours		
	Can be shortened to 30 mins		
Abbreviated X-match	Type/screen + immediate spin		
	DC/PS = no agglutination/hemolysis		
Electronic X-match	Patient blood type is determined on 2 occasions		