

# DETERMINATION OF RH INCOMPATIBILITY



RAJA KUMAR PREMJIITH RAJA

LA1-171-1

# BLOOD TYPES



- A, B, O blood groups are specific types of proteins found on the surface of RBC's
- Also found in the cells and other body fluids (saliva, semen, etc)
- O represents neither protein being present on RBC
- Possible groups include: A, B, AB, or O
- A, B, O groups most important for transfusions

BLOOD TYPES

# RH FACTOR

- Proteins (antigens) occurring only on surface of RBC's
- Rh + if proteins present
- Rh – if proteins absent
- A+, A-, B+, B-, AB+, AB-, O+, O-
- Most important for pregnancy
- Inheritance is Autosomal Dominant
- 15% Caucasian population is Rh-

Rh



# Why Does Rh Status Matter?

Fetal RBC cross to maternal circulation

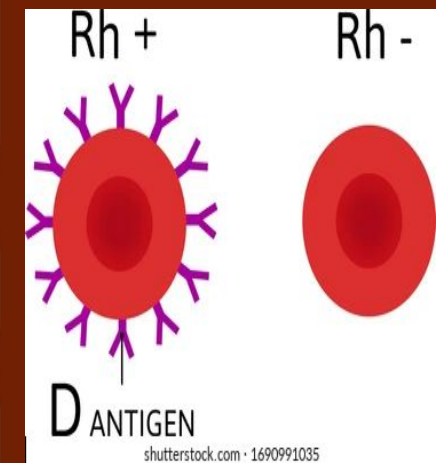
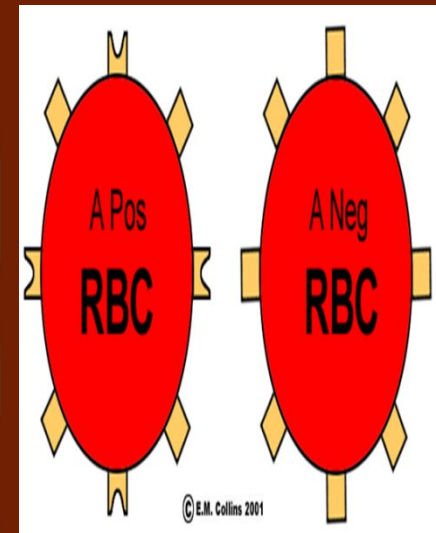
Maternal immune system recognizes foreign antigens if fetus Rh + and mother Rh -

Antibodies are formed against fetal antigens

Subsequent pregnancy with Rh+ fetus, immune system activated and large amounts of Ab formed

IgG Ab cross placenta & attack fetal RBC

Fetal anemia, hydrops, etc



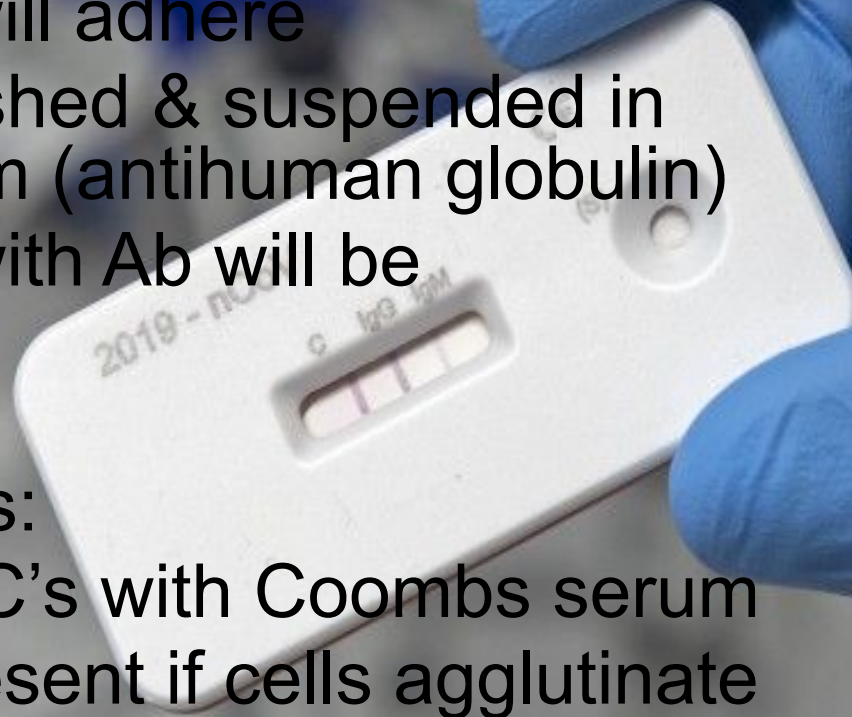
# GENERAL SCREENING

- ABO & Rh Ab @ 1<sup>st</sup> prenatal visit
- @ 28 weeks
- Postpartum
- Antepartum bleeding and before giving any immune globulin
- Neonatal bloods ABO, Rh, DAT



# GOLD STANDARD TEST

- Indirect Coombs:
  - mix Rh(D)+ cells with maternal serum
  - anti-Rh(D) Ab will adhere
  - RBC's then washed & suspended in Coombs serum (antihuman globulin)
  - RBC's coated with Ab will be agglutinated
- Direct Coombs:
  - mix infant's RBC's with Coombs serum
  - maternal Ab present if cells agglutinate



# + Rh(D) Antibody Screen

- Serial antibody titres q2-4 weeks
- If titre  $\geq 1:16$  - amniocentesis or MCA dopplers and more frequent titres (q1-2 wk)
- Critical titre – sig risk hydrops
- \*\* amnio can be devastating in this setting
- U/S for dating and monitoring
- Correct dates needed for determining appropriate bili levels (delta OD450)

# U/S Parameters

- Non Reliable Parameters:
    - Placental thickness
    - Umbilical vein diameter
    - Hepatic size
    - Splenic size
    - Polyhydramnios
  - Visualization of walls of fetal bowel from small amounts intraabdominal fluid may be 1<sup>st</sup> sign of impending hydrops
  - U/S reliable for hydrops (ascites, pleural effusions, skin edema) – Hgb < 70
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