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**Submitted to Mam Huma Imtiaz**

**Question 1:**

**Answer:**

Hemovigilance is derived from to Greek word

**Heama:** mean blood

**vigilian:** mean information receive about something, survey about something.

Heamoviligence is the set of surveillance procedures covering the entire blood. We see in this procedure finding some error or any harmful substance. Those are unexpectable or undesirable for donor and recipient.

OR

It is observing, recording, reporting and analyzing when something goes wrong in the blood transfusion chain and using the lesson learned to take action to avoid it going wrong again.

**Benefits OF HV System:**

1. Haemovigiliance data can be used to define priorities for blood transfusion.
2. Improve public confidence and trust. Due to it determine all mistake.
3. Transfusion service improve through HV system.
4. Understanding of frequency and range transfusion related events.
5. Improve understanding of real risk/hazards of transfusion.
6. Taking corrective measures and minimize incidence.

**Limitation of HV system:**

1. Incomplete reporting
2. Limited detail
3. Variation in terminology and definition
4. Influence of health
5. Influence of health care system or institution culture regarding compliance process improvement

**Question 2:**

**Answer:**

**Purpose of cross Match:**

The two individual blood group is cross match to each other. Due to check the person of ABO group is compatible or incompatible.

Cross match is very important before the blood transfusion. Due to if a donor RBC make antibody against the recipient RBC. Reaction occur between antibody and antigen cause hemolytic anemia.

Cross match is very important due to incompatible transfusion can cause severe hemolytic anemia. The cross is incompatible the donor should not use.

**Procedure of Major Cross Match:**

* In major cross match take the patient serum and the donor blood (RBC). Detect antibody against the donor blood. (Patient serum detect or find out against antibody. We do major cross match).
* For the Major cross match washed donor red blood cell.
* Incubate with the recipient serum. 31 degree centigrade.
* Add 2 two drop AHG.
* Centrifuge for 10 minute.
* When they look for agglutination microscopically.

**Question 3:**

**Answer:**

Hemolytic decease of the new born and fetus is a destruction of red blood cell (RBC) of the fetus and neonate antibody produced by the mother.

In this condition the fetal RBC life span is shortened due to maternal antibody against red cell antigen acquired from the father.

**Pathogenesis OF Hemolytic In New Born:**

A pregnant women Rh negative and the fetus inheritance from father Rh positive. It condition the D antigen and D antibody incompatibility reaction occur between antigen and antibody. Due destruction of fetus RBC cause hemolytic decease in new born.

Sensitization the Rh D antigen from the fetus to mother may lead to the production of maternal (IgG) anti-D antibody. Rh antibody protein in nature. They easily cross the placenta destruction the fetus RBC cause hemolysis in new born. After hemolysis occur fetus death.

**Question 4:**

**Answer:**

**Duffy Antigen:**

Duffy blood group antigen are glycoprotein in nature. Present on the surface of RBC. Duffy glycoprotein is a transmembrane protein. Duffy antigen composed on 336 amino acid this antigen. They are change the RBC surface or span the RBC surface.

It encode by FY gene due to also known as FY antigen. FY gene present on chromosome no 1. Duffy antigen present on the surface of RBC specially brain cell, endothelial cell, kidney, colon and spleen.

**Function of Duffy Antigen:**

Duffy antigen present on the surface of RBC. This antigen change the surface of RBC work as a chemokine receptor. The binding side is chemokine. During inflammation different chemical release in the body and recruits other blood cell to the area of damage. These chemical directly bind on Duffy receptor.

This is a receptor for plasmodium vivax, plasmodium knowlesi and chemokine and this receptor is present on the surface of RBC.

**Question: 5**

**Answer:**

Design Comb’s Reagent:

* Infected autoimmune person taking blood.
* Then separating the serum with auto antibody. (In the serum auto-antibody present).
* Then the serum is injected in the lab animal or research animal.
* Animal produced antibody against auto-antibody.
* Then the blood collect from the animal and separated to give the form antibody.
* Then prepare a reagent in this reagent present those antibody. Which act against on auto-antibody.

**Procedure of IAT:**

* IAT stand for indirect antiglubuline test. IAT is a type of comb’s test.
* Purpose of IAT find-out on those anti-body which present in plasma.

**Steps:**

1. Taking a patient plasma.
2. Add reagent know RBC antigen.
3. If reaction between antigen and antibody complex.
4. Then add comb’s reagent.
5. Comb’s reagent mean those antibody present in the body which against on human body.
6. Those antibody present on surface of RBC. Comb’s reagent make complex on those antibody.
7. Reaction occur between plasma antibody and comb’s antibody.
8. Agglutination will occur it mean test will positive.