**NAME: UMECHUKWU DIVINE**

**MATRIC NO: 17/mhs01/312**

**COURSE: MED SURG**

**ASSIGNMENT: Explain the role of the immune system**

**2: Describe the two types of community**

**3: Explain the different types of anti bodies and their roles**

**1:**  The major function of the immune system is to protect the host from environmental agents such as microbes or chemicals, thereby preserving the integrity of the body. This is done by the recognition of self and response to non-self. The immune response has been artificially divided into innate immunity (resistance) and specific immunity. Specific immunity is further divided into humoral immunity, the one involved with antibody, and cellular immunity, which is orchestrated by T cells. It is essential to understand that although these divisions have helped in understanding and analyzing the immune response, the system functions as a single unit rather than as a separate entity. In this paper, a simplified analysis of specific immunity will be given. However, the importance of nonspecific immunity, especially as it pertains to its role in preventing exposure of environmental substances, should not be forgotten.

**2: Describe the two types of immunity**

**Active immunity**

Individuals rely on active immunity more so than passive immunity. Active immunity is created by our own immune system when we are exposed to a potential disease-causing agent (i.e., pathogen). Most of the time, we are exposed to these potential pathogens naturally throughout the course of our day — in the air we breathe, the food we eat, and the things we touch. Luckily, most of these exposures are to agents that will not result in disease, either because they are harmless or because our immune system works to neutralize them.

In addition to “fighting off” these pathogens, active immunity is important because it lasts a long time in the form of immunologic memory. Immunologic memory consists of B and T cells that can recognize a particular pathogen (see "Adaptive immune system"). These cells circulate at low levels in our bodies and if “activated” by recognizing that pathogen in their travels, they quickly start to multiply and signal other elements of the immune system to activate as well.

**Passive immunity, or immunity** gained in a way other than from one’s own immune system, can occur in a few ways and can be life-saving. However, passive immunity is short-lived because the antibodies are not continually replenished as they would be in an individual whose immune system is responding directly. Passive immunity can occur in a couple of ways:

Maternal antibodies

Unborn and newly born babies are protected by antibodies from the maternal immune system. These antibodies are shared in two ways: across the placenta and in breast milk.

Placenta and circulation — When a woman is pregnant, her blood circulates through the placenta to deliver nourishment and protection to the developing fetus. As the blood circulates, so do the antibodies and immune system cells that travel in blood. Although developing fetuses are not typically exposed to any pathogens in utero, they are exposed to viruses and bacteria during and immediately after birth. The types and levels of antibodies in a baby’s blood at birth reflect those of the mother.

Breast milk — Babies also get antibodies from breast milk, particularly from a protein-rich version of breast milk supplied in the first few days after birth known as colostrum. Colostrum, which is produced in the first three to five days after birth, contains higher levels of antibodies that protect the intestinal surface (immunoglobulin A or IgA) and lower levels of nutritional ingredients than milk produced in the weeks following birth. This transfer of antibodies from mother to child suggests its importance in the period before a baby’s immune system can generate its own protection.

**3:** There are five different antibody isotypes seen in humans: IgG, IgA, IgM, IgE, and IgD.2﻿

IgG is the antibody isotype that most people think of when they're talking about antibodies. It is the antibody that is built by immunization. It activates an immune cascade that can eliminate some forms of infection. IgG can also neutralize certain toxins

B: IgA is the antibody isotype that is found in usually mucosal areas, such as the mouth and the vagina. It can also be found in saliva, tears, and breast milk. IgA is formed by two Ig subunits bound together. When IgA binds to a target, it can stimulate inflammation. In mucosal areas, IgA can also keep pathogens from sticking to epithelial cells.4﻿ The production of IgA against inappropriate targets is associated with certain autoimmune diseases, such as celiac disease.

C: IgM is one of the first types of antibody to be produced after a pathogen has entered the body.6﻿ Since it is made up of five Ig subunits bound together, it has very high avidity. In other words, it sticks very strongly to its target. IgM is very important in the early stages of an infection. IgM sometimes appears when an infection becomes reactivated, such as with a herpes outbreak. It can also appear when someone is reexposed to a disease they've previously gotten rid of.

**D:** IgE is the antibody that is responsible for the allergic response.8﻿ It is mostly found in the lungs, skin, and mucous membranes. When IgE binds to an allergen, it starts the histamine reaction. It's the histamine reaction that causes the symptoms of an allergy attack. This single subunit antibody also helps to protect the body from parasitic worms.

**E:** IgD is important in the early stages of the immune response. Bound to B cells, it does not circulate.9﻿ Instead, it signals those cells to become active. This can help to stimulate inflammation. IgD is the least understood type of antibody, and its functions are still being discovered.