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-BENTA disease is a rare genetic disorder of the immune system caused by mutations in the gene *CARD11*. The disease is characterized by high levels of certain immune cells starting in infancy, an enlarged spleen, enlarged lymph nodes, immunodeficiency, and an elevated risk of lymphoma, a type of cancer

-Autoimmune lymphoproliferative syndrome (ALPS) is a rare immune disorder first described by NIH scientists in the mid-1990s that can cause numerous autoimmune problems, such as low levels of red blood cells, clot-forming platelets, and infection-fighting white blood cells. These problems can increase the risk of infection and haemorrhage

-Autoimmune polyglandular syndrome type 1 (APS-1), also called autoimmune polyendocrinopathy-candidiasis-ectodermal dystrophy (APECED), causes a diverse range of symptoms, including autoimmunity against different types of organs and increased susceptibility to candidiasis, a fungal infection caused by *Candida* yeast

-CGD occurs when white blood cells called phagocytes are unable to kill certain bacteria and fungi, making people highly susceptible to some bacterial and fungal infections. Mutations in one of five different genes can cause this disease

-CVID is caused by a variety of different genetic abnormalities that result in a defect in the capability of immune cells to produce normal amounts of protective antibodies. People with CVID experience frequent bacterial and viral infections of the upper airway, sinuses, and lungs.

2.

SECONDARY IMMUNODEFICIENCY

**-The human immunodeficiency viruses (HIV)** are two species of *lentivirus* (a subgroup of retrovirus) that infect humans. Over time they cause acquired immunodeficiency syndrome (AIDS), a condition in which progressive failure of the immune system allows life-threatening opportunistic infections and cancers to thrive. Without treatment, average survival time after infection with HIV is estimated to be 9 to 11 years, depending on the HIV subtype.

-**Diabetes mellitus** refers to a group of diseases that affect how your body uses blood sugar (glucose). Glucose is vital to your health because it's an important source of energy for the cells that make up your muscles and tissues. It's also your brain's main source of fuel.The underlying cause of diabetes varies by type. But, no matter what type of diabetes you have, it can lead to excess sugar in your blood. Too much sugar in your blood can lead to serious health problems.