

PLASMA DONOR APPLICATION

Abstract:

Plasma is the liquid component of your blood that contributes to 55% of your blood's total volume. Plasma is necessary to help your body recover from injury, distribute nutrients, remove waste and prevent infection, while moving throughout your circulatory system. Plasma is essential for your body to function and serves as the liquid that holds your red and white blood cells and platelets together. Plasma disorders are rare, but your donation of plasma helps others live healthy lives. There are circumstances where a patient finds it difficult to find a plasma donor. Our application uses IBM Cloud platform that enables easier plasma donation and availability to the patients. The patient can find a blood bank of their choice and get plasma from there. We also notify them through Email in case blood plasma is unavailable.

PROBLEM STATEMENT

During the COVID 19 crisis, the requirement of plasma became a high priority and the donor count has become low. Saving the donor information and helping the needy by notifying the current donors list, would be a helping hand. In regard to the problem faced, an application is to be built which would take the donor details, store them and inform them upon a request.

Tips and pointers for future use(not intended to be used as such in the document)

There are two ways that you can donate plasma:

1. **Donating whole blood:** A healthcare provider places a needle in a vein in your arm and withdraws blood. Later, a laboratory will separate plasma as needed.
2. **Donating plasma only (plasmapheresis):** Similar to having whole blood removed, a healthcare provider will place a needle in a vein in your arm to withdraw blood. That blood enters a centrifuge machine that spins it and separates the plasma from the blood cells and platelets. The machine removes the separated plasma and returns your remaining blood components into your body in a saltwater (saline) solution.

After removing plasma from your body, the lab freezes your donated plasma within 24 hours of removing it to preserve clotting factors and immunoglobulins. Frozen plasma has a shelf life of one year.

Plasma from donors with an AB blood type is preferred because it does not have antibodies in it and can be given to any blood type recipient, but anyone can donate.

Plasma is commonly given to trauma, burn and shock patients, as well as people with severe liver disease or multiple clotting factor deficiencies. It helps boost the patient's blood volume, which can prevent shock, and helps with blood clotting. Pharmaceutical companies use plasma to make treatments for conditions such as immune deficiencies and bleeding disorders.

Introduction:

Literature Survey:

1. Melissa K. Hyde, Barbara M. Masser, Sarah P. Coundouris, A review of whole-blood donors' willingness, motives, barriers and interventions related to donating another substance of human origin, *Transfusion Medicine*, 10.1111/tme.12849, 32, 2, (95-114), (2022).

Link: <https://onlinelibrary.wiley.com/doi/10.1111/tme.12849>

2. James R. Stubbs, Mary J. Homer, Toby Silverman, Andrew P. Cap, The current state of the platelet supply in the US and proposed options to decrease the risk of critical shortages, *Transfusion*, 10.1111/trf.16140, 61, 1, (303-312), (2020).

Link: <https://onlinelibrary.wiley.com/doi/10.1111/trf.16140>

3. Christopher R. France, Janis L. France, Lina K. Himawan, What would it take to convince you to donate? A survey study of the relationship between motivators, barriers, and payment for whole blood, plasma, and platelet donation, *Transfusion*, 10.1111/trf.16886, 62, 6, (1251-1260), (2022).

Link: <https://onlinelibrary.wiley.com/doi/10.1111/trf.16886>

4.A website for Plasma donation developed using Mern Stack with MongoDB as database along with Node JS.The user can also view the total active cases, nearby vaccine centers, hospitals address. The main objective of developing the website is to make it easier for the COVID-19 patients to get a plasma donor easily and as soon as possible

Link: https://dev.to/nehasoni___/plasma-donation-website-using-mern-stack-26f5

5.Db2 is a family of data management products, including database servers, developed by IBM. They initially supported the relational model, but were extended to support object–relational features and non-relational structures like JSON and XML.

Link: <https://cloud.ibm.com/docs/Db2onCloud?topic=Db2onCloud-getting-started>