

Project Proposal: Organ Procurement and Transplantation Network System

1. Business Description

The Organ Procurement and Transplantation Network System (OPTNS) is a database management system that constructs, maintains, and manipulates various types of data about a person's donation or procurement of a specific organ. Every person in the database has a comprehensive medical history and other critical information, such as blood group, age, and so on. In short, it keeps a database of statistical information about the network of organ donation and procurement in various countries.

Records may include the following information:-

1. Personal Information
2. Medical History
3. Medical insurance, if any
4. Allergies to any medicine, if any
5. The need for an organ presently
6. Medical insurance provided by any private or government insurers
7. Address

This record serves several functions and is critical to the proper operation of the **Organ Procurement and Transplantation Network System**, particularly in today's complex healthcare environment. These records provide statistical data on the number of organs required and available at any given time. It is required for organ procurement and transplantation planning, evaluation, and coordination. We designed the project so that every transplantation procedure is approved by the government. So, the transplantation records are maintained by the organization. Furthermore, these operations can only be performed in government-approved hospitals.

2. Problem Statement

Organ wastage is a major problem that can only be solved by creating a well-organized database of all patients and donors that can be easily processed. When a person donates or obtains an organ from a medical institution, records of donors and patients are created.

The situation with organ waste is the worst in the case of hearts. According to an Indian survey, the registry received organs from 306 brain and dead patients and distributed them to various hospitals based on a waiting list. Only 52 hearts and 13 lungs were harvested for transplant, compared to 280 livers and 563 kidneys. The reason for this was a lack of coordination among transplant surgeons, which caused a delay in retrieval. Kidneys and livers are the two most frequently required organs. According to the United States Department of Health and Human Services, approximately 83 percent of those on the national transplant waiting list are waiting for kidney transplants, while approximately 12 percent are waiting for liver transplants. As a result,

an effective and efficient management system is required to address all of the aforementioned issues.

3. Proposed Solution

With the use of the Organ Procurement and Transplantation Network System, we intend to develop a solution that addresses the issue of donor shortages while also providing statistical data on transplants to assist the government in developing better rules and regulations. The Organ Procurement and Transplantation Network System (OPTNS) is primarily designed for hospitals, clinics, and other healthcare facilities to manage donor registration and user maintenance. Those who are interested can register using this system. The Organ Procurement and Transplantation Network System is a system that consists of a client tier, an organization tier, and a database management tier. The system interfaces have been designed to meet the requirements and needs of the current market. This system will aid in improving current situation performance and overcoming current problems.

4. Users

- Donor/Patient: Each user has an account, which can only be registered by a government-certified hospital and stores all of the information specified in the problem statement
- Hospital: Only hospitals can request a donation or a procurement transaction
- Government Organization: Government organizations will monitor the matching of donors and patients and may approve a transplantation operation if all rules are followed
- Gathering statistical information from the history of transplant transactions

5. Potential Entities and Relationship Sets

Entity Sets:

User

- User_ID
- Name
- Date of Birth
- Phone Number (multi-valued)
- Medical Insurance
- Medical History
- Address

Patient

- Patient_ID
- Organ Required
- Reason of procurement
- User_ID (Foreign Key)

Donor

- Donor_ID
- Organ Donated
- Reason of donation
- User_ID (Foreign Key)

Organ Available

- Organ_ID
- Organ Name
- Donor_ID (Foreign Key)

Organization

- Organization_ID
- Organization Name
- Location
- Government approved organization or not
- Phone Number (multi-valued)

Doctor

- Doctor_ID
- Doctor Name
- Phone Number (Multi-valued)

Organization Head

- Head Name
- Date of Joining
- Term Length

Relationship Sets:

Donates: The act of donation of an organ from a donor

- Date: date of donation

Procures: The act of procuring an organ by the patient

Transaction:

- Date of transaction
- Status: whether the surgery was successful or not

Organ Donated: The organ donated by a donor, which is then stored in Organ available table.

Attended By: The transplantation performed by doctor – procuring an organ from a donor and transplanting it to the patient by surgery

Registers: Donor is registered in which organization

Works in: The organization where the doctor works

Headed By: The organization is headed by which person

Project Group 10

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