

HOG Clinical Trials Tracker

Project 1 Step 1 Draft

Group 117

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Overview:

Health Oncology Group (HOG) is a National Cancer Institute (NCI) funded organization that conducts clinical trials of cancer treatments in adults. Increased participation from sites and patients in their clinical trials increased funding from the NCI and allowed HOG to expand their network. During the transition from paper to electronic records, a group of clinical trial recruiters have asked the software engineers to implement a database driven web application that centralizes the records of patients, personnel and sites associated with the clinical trials to keep up with the expansion.

Currently there are 25 clinical trials, with 100 participating hospitals/sites. On average each clinical trial plans to accrue a total of 300 patients over the length of approximately 2 years. Employees of multiple organizations can support the trials, and each clinical trial has at least one employee assigned to the trial; however, an employee may be assigned to work on multiple clinical trial projects. Some hospitals may also have multiple clinical trials occurring at their site; however, a patient at a hospital may only be enrolled in one clinical trial at a time.

HOG hopes to maintain a timeless database system that can track the accrual of patients for clinical trials and that can provide a current employee directory for staff to use over the life of the clinical trials. The electronic database will decrease the amount of paper records required and provide a central hub of information that will be immensely helpful for clinical trial recruiters.

Database Outline:

clinical_trials:

Purpose:

An entity that stores information about the clinical trial including the trial id, type of cancer, investigational drug being used, trial description, and accrual goal (which is the maximum number of patients allowed on a trial).

Attributes:

- clinical_trial_id	Primary Key: INT	NN
- cancer_type	VARCHAR	NN
- investigational_treatment	VARCHAR	NN
- trial_description	VARCHAR	NN
- maximum_patients	INT	NN

Relationship:

- 1:M relationship between clinical_trials and patients with *clinical_trials_clinical_trial_id* as a FK inside of patients; A clinical trial may have 0 or more patients.
- M:M relationship between clinical_trials and hospitals; *clinical_trials_clinical_trial_id* and *hospitals_hospital_id* are FK in *hospitals_supporting_clinical_trials*, an intersection table. Many clinical trials may be conducted by many hospitals.
- 1:M relationship between clinical_trials and employees_supporting_clinical_trials with *clinical_trials_clinical_trial_id* as a FK inside of *employees_supporting_clinical_trials*; A clinical trial must have at least one employee in some supportive role.

- M:M Relationship between clinical_trials and employees with *clinical_trials_clinical_trial_id* and *employees_employee_id* as FKs in employees_supporting_clinical_trials, an intersection table turned entity due to the addition of an attribute; Many clinical trials must have at least one employee in a supportive role.

employees_supporting_clinical_trials

Purpose:

An entity that stores information about the clinical trial and serves as the intersection table between clinical_trials and employees due to the M:M relationship. This entity will have a composite attribute, *employee_role*, that will allow an employee to have a specific role in one trial, while allowing for another role in another trial. This allows for the role to not be permanently tied to the employee entity.

Attributes:

- employees_employee_id Foreign Key: INT NN
- clinical_trials_clinical_trial_id Foreign Key: INT NN
- employee_role VARCHAR

Relationship:

M:1 Relationship between employees_supporting_clinical_trials and clinical_trials; many employees will have at most one role in any given clinical trial.

M:1 Relationship between employees_supporting_clinical_trials and employees; many employee roles may be assigned to any given employee.

employees:

Purpose:

An entity that stores information about the employee including the employee id, employee first and last name, employee's position, employee's contact information, and employee's employer organization.

Attributes:

- employee_id Primary Key: INT NN
- employee_first_name VARCHAR NN
- employee_last_name VARCHAR NN
- position VARCHAR NN
- email VARCHAR
- desk_phone VARCHAR
- employer VARCHAR NN

Relationship:

- 1:M relationship between employees and employees_supporting_clinical_trials with *employees_employee_id* as a FK in employees_supporting_clinical_trials; An employee may have many roles, but only one role in a given clinical trial.
- M:M relationship between employees and clinical_trials with *clinical_trials_clinical_trial_id* and *employees_employee_id* as FKs in employees_supporting_clinical_trials, an intersection table turned entity due to the addition of an attribute; Many employees may be working on 0 or more clinical trials.

patients:

Purpose:

An entity that stores information about the patient including their id, first and last name, address, and date of birth.

Attributes:

- patient_id Primary Key: INT NN

- patient_first_name	VARCHAR	NN
- patient_last_name	VARCHAR	NN
- patient_street	VARCHAR	NN
- patient_city	VARCHAR	NN
- patient_state	VARCHAR	NN
- patient_zip	VARCHAR	NN
- patient_sex	CHAR	NN
- dob	DATE	NN
- hospitals_hospital_id	Foreign Key: INT	NN
- clinical_trials_clinical_trial_ID	Foreign Key: INT	NN

Relationship:

- M:1 relationship between patients and hospitals; Many patients must each go to exactly one hospital.
- M:1 relationship between patients and clinical_trials; Many patients must each be on exactly one clinical trial.

hospitals:

Purpose:

An entity that stores information about the hospital or site including the hospital id, name, and address.

Attributes:

- hospital_id	Primary Key: INT	NN, AI
- hospital_name	VARCHAR	NN
- hospital_street	VARCHAR	NN
- hospital_city	VARCHAR	NN
- hospital_state	VARCHAR	NN
- hospital_zip	VARCHAR	NN

Relationship:

- 1:M relationship between hospitals and patients, with *hospitals_hospital_id* as a FK in patients; A hospital may have many patients.
- M:M relationship between hospitals and clinical trials, with *hospitals_hospital_id* and *clinical_trials_clinical_trial_id* as a FKs in *hospitals_supporting_clinical_trials*, an intersection table; Many hospitals may have 0 or more clinical trials.

Entity – Relationship Diagram:

