AI Integration in Healthcare – Enhancing Privacy and Security in Clinical Drug Trials

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RECRUITMENT ISSUEs IN DRUG TRIALS

Privacy and security issue in recruitment process of clinical drug trials at Sunshine Hospital.

Human bias and errors persist across all trial stages, particularly prevalent in the patient selection

Issue 1 – Introduction of Human errors and bias.

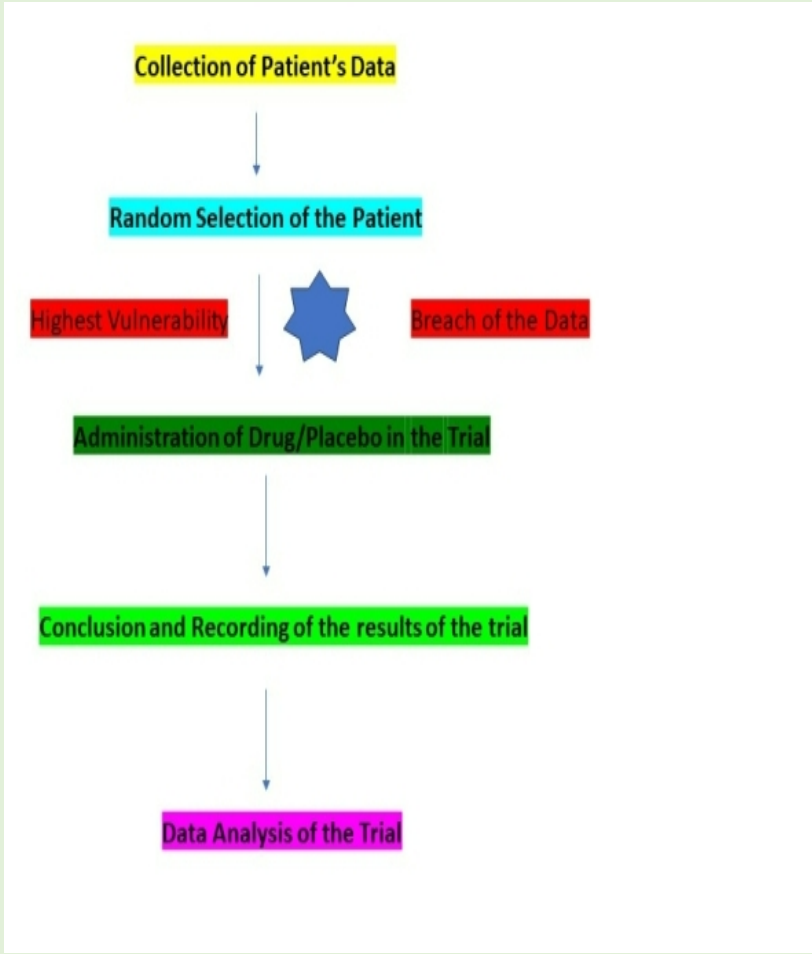
Issue 2 – Breach of data and unauthorized access of Medical Files.

Issue 3 – Risk to integrity of the hospital and increased vulnerability due to human errors.

Issue 4 – Compliance problems due to human selection bias in trials. Compromises privacy.

Issue 5 – Threat to Accreditation of the hospital.

Issue 6 – Lack of anonymity and increased privacy risk.



Proposed Informatics Solution

Solution 1 - Use Artificial Intelligence and develop an electronic tool which can eliminate human error and bias by generating randomness in selection of the patients.

Solution 2 - Accessibility of Medical Files – 3 Factor Authentication – Username Password, Iris Recognition and OTPs generated in their hospital application.

Solution 3 - Usage of Machine learning to identify prime candidates and include them in the trial without any human errors and bias.

Solution 4 and 5 - Internal HIPAA audits along with patient and staff surveys will become a qualitative assessment where feedback captured will lead to an increase in overall fairness.

Solution 6 – Anonymity maintained by using de-identified data.

Consideration of medical history of patients and other variables (excluding names) to encourage anonymity.

- The main aim of this AI tool is that it will remove the selection bias with the help of statistical testing (propensity score analysis) where the patients chosen for the drug trials after integration of tool will be compared with the cohorts selected in the previous trials held in Sunshine Hospital.

Validation of the Solution

- Methodology – Quantitative Solution Proofing and Qualitative Surveys (after adoption of tool)
- Variables used in an aggregated form to reduce the risk of identification.
- Baseline for algorithm - Previous accidents involved with unauthorized staff access to patient files in research trials and incidents.
- The hospital application will be available just for the team involved in the drug trials, hence this will help to resolve the accessibility issues faced by the hospital.
- Statistical testing such as Propensity Score Analysis, T-tests, Regression Analysis will be used to validate the solution
- There is a prediction that there would be a 35% - 40% reduction in the selection bias.
- The goal for HIPAA audits is that there is an improvement of 10% ratings across the questionnaire categories in the first year.
- The goal is to achieve a combined 30% improvement after integration of the tool in the coming next 2 years.

Benefits of the Solution

- Increase in Trust of the patients.
- Bias free drug trials.
- Elimination of privacy and security risks.
- Increase in innovation in healthcare due to valid trials.
- Integrity and Accreditation of the Hospital is maintained.
- Reduced costs in Recruitment process of the patients.