Design Thinking Project Workbook

Don't find customers for your product but find products for your customers

1. Team

Team Name:

Team Logo (if any):

Team Members:

1. K Aditri Shreeya – 2320040015
2. K Anvitha Reddy – 2320040120
3. M Himateja – 2320040036

2. Problem/Opportunity Domain

Domain of Interest: Personalised Medicine in Health Care

Description of the Domain:

Personalized medicine in health care industry analyses an individual's DNA to select the most suitable treatments. It employs advanced technology and AI to ensure that medications are effective and have minimal side effects for different genetics. The key challenges are that, it can be costly and may not be readily available to everyone. Ultimately, it seeks to enhance healthcare by addressing the specific needs of each person.

Why did you choose this domain?:

This field can change patient care by making treatments specific to each and every individual person, leading to better results and fewer side effects for the treatments. There is a lot of potential in this field as it addresses the healthcare problems and helps to develop new medical technologies and medicines. By working in this field, we can solve major healthcare challenges and improve lives for patients everywhere.

3. Problem/Opportunity Statement

Problem Statement:

Nowadays, patients are frequently provided with the same treatment regardless of their similar symptoms or diagnoses. However, this approach ignores the genetic differences between individuals, which can greatly affect how they react to medications and treatments. As a result, some treatments might be less effective or even harmful for certain patients, leading to less satisfactory health outcomes.

Problem Description:

The problem with traditional medical treatments is that they use the same approach for everyone, without considering that each person is different in terms of genetics, lifestyle, and environment. This can lead to treatments that don't work well, cause side effects, or don't feel personalized. The challenge is to create personalized medicine that tailors treatments to each individual's unique needs.

Context (When does the problem occur):

The problem happens when doctors give treatments based only on symptoms or diagnoses without considering a person's genetic differences. This is common with diseases like cancer or heart disease, where genetics affect how people respond to medicine. It also occurs in regular care when treatments are not customized to each person's unique biology, leading to differences in how well treatments work and the overall results for patients.

Alternatives (What does the customer do to fix the problem):

Standardized Treatments: Patients often start with standard treatments because they're affordable and easy to get, though they may not fit everyone's needs perfectly.

Clinical Trials: Patients may participate in clinical trials for new drugs or therapies that are being tested for effectiveness and safety. These trials can give access to innovative options.

Genetic Testing: Some individuals seek genetic testing to learn how their genes might affect their treatment response.

Second Opinions: Getting a second opinion from another doctor can help find the best treatment.

Personal Health Monitoring: Using wearables and health apps lets people track their health and make lifestyle changes to improve well-being.

Customers (Who has the problem most often):

1. **Patients with Chronic Conditions:** Individuals suffering from conditions like cancer, diabetes, etc, where treatment effectiveness can vary widely based on genetic factors.

2. **Elderly Patients:** Older adults might face more challenges with medicines due to age-related changes in their bodies.

3. **Patients with Rare Diseases:** Those with rare diseases often need special treatments that aren't covered by general guidelines.

4. **Healthcare Providers:** Doctors must manage different patient needs and navigate the limits of standard treatments.

5. **Pharmaceutical Companies:** Drug makers are working on medicines that can suit many people but are also focusing on creating personalized treatments.

Emotional Impact (How does the customer feel):

Patients often experience frustration and anxiety when treatments fail to work as expected or even when it causes side effects. It can slow their recovery time or even worsen their conditions. When people don't get personalized care, they may feel unsure if the treatment is really helping their specific situation. This can be especially upsetting for those with serious or life-threatening conditions, as they worry about their future health and feel helpless when standard treatments don't provide much relief.

Quantifiable Impact (What is the measurable impact):

Ineffective treatments can lead to increased healthcare costs due to the necessity for additional doctor visits, diagnostic tests, and repeated treatments that do not yield positive outcomes. Such treatments may also cause adverse side effects, requiring further medical interventions and extending recovery periods. The likelihood of treatment failure is elevated when therapies are not personalized, which necessitates the exploration of alternative treatment options. This situation can diminish a patient's quality of life by impacting their daily functioning and overall well-being. Furthermore, the process of trial-and-error in identifying effective treatments results in significant wastage of time and resources for both patients and healthcare providers.

Alternative Shortcomings (What are the disadvantages of the alternatives):

Standard Treatments: May not be tailored to individual needs, leading to reduced effectiveness and possible side effects.

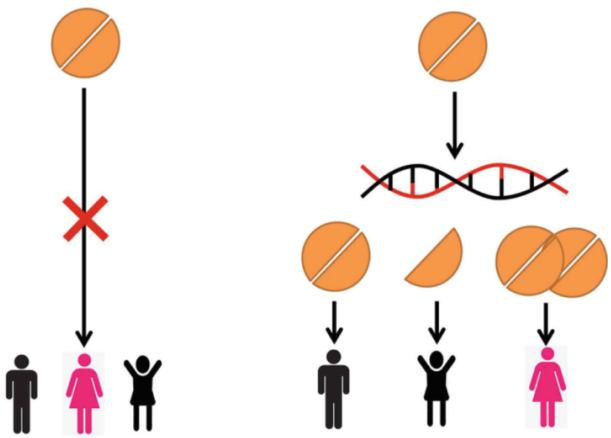
Clinical Trials: Often limited, may not suit for everyone, and involve risks due to unproven therapies.

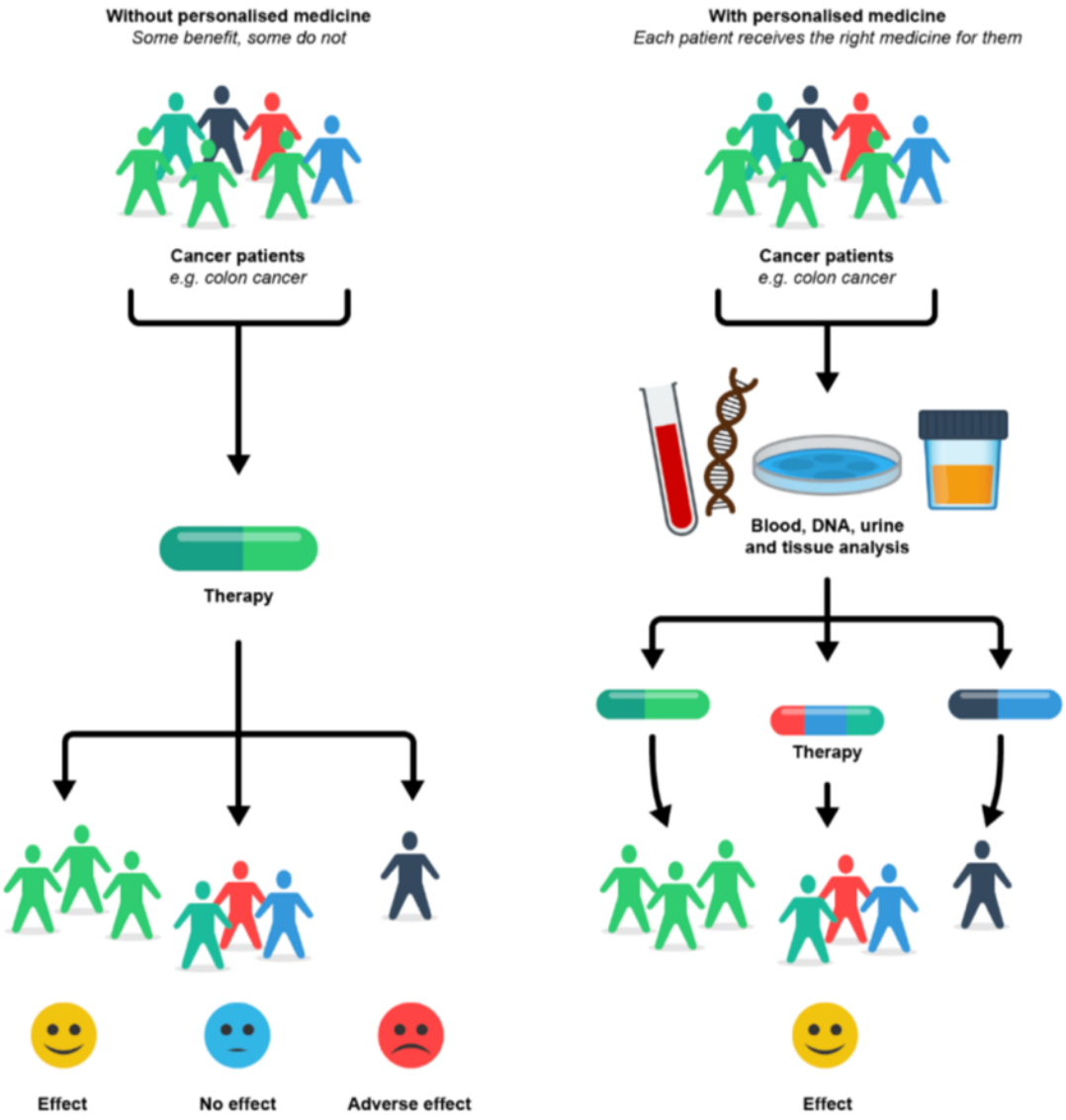
Genetic Testing: Costly and the results aren't always used in regular care.

Second Opinions: Delayed treatment and may not always result in a significantly better solution.

Wearables and Health Apps: Can't replace professional medical advice or offer personalized treatments.

Any Video or Images to showcase the problem:





Links: https://www.personalizedmedicinecoalition.org/Userfiles/PMC-Corporate/file/PMC_The_Personalized_Medicine_Report_Opportunity_Challenges_and_the_Future.pdf

4. Addressing SDGs

Relevant Sustainable Development Goals (SDGs):

SDG 3 - Good Health and Well-being

SDG 9 - Industry, Innovation, and Infrastructure

SDG 10 - Reduced Inequalities

SDG 12 - Responsible Consumption and Production

How does your problem/opportunity address these SDGs?:

SDG 3: Good Health and Well-being
Personalized medicine helps people get better healthcare by creating treatments that fit their unique needs. This means fewer ineffective treatments and better overall health.

SDG 9: Industry, Innovation, and Infrastructure
To make personalized medicine work, we need new healthcare technologies like genetics and data analysis, which help build a stronger healthcare system.

SDG 10: Reduced Inequalities
Personalized medicine can lessen health gaps by offering treatments based on individual genetics, making sure everyone gets better care, including those with rare conditions or different backgrounds.

SDG 12: Responsible Consumption and Production
By ensuring treatments work better for each person, personalized medicine cuts down on unnecessary medications, making healthcare resources more efficient.

5. Stakeholders

1. **Who are the key stakeholders involved in or affected by this project?**

   Patients, Doctors/Healthcare Providers, Pharmaceutical Companies, Hospitals/Clinics, and Geneticists/Biomedical Researchers.

2. **What roles do the stakeholders play in the success of the innovation?**

   Patients – Provide genetic data and feedback on treatment effectiveness, driving the demand for personalized healthcare.

   Doctors/Healthcare Providers – Integrate the AI tool into clinical practice, ensuring accurate interpretation and application of personalized treatment plans.

   Pharmaceutical Companies – Develop drugs suited for personalized treatments and collaborate in research to optimize AI-driven therapies.

   Hospitals/Clinics – Facilitate adoption and deployment of the AI tool within medical infrastructures.

   Geneticists/Biomedical Researchers – Supply genetic insights and validate the AI's recommendations, improving its accuracy and relevance.

3. **What are the main interests and concerns of each stakeholder?**

   Patients – Want effective, personalized treatment and data privacy.

   Doctors/Healthcare Providers – Seek accurate AI recommendations and easy integration into practice.

   Pharmaceutical Companies – Interested in drug compatibility with personalized treatments and market opportunities.

   Hospitals/Clinics – Concerned with cost-effective, seamless adoption of the AI tool.

   Geneticists/Biomedical Researchers – Focus on improving genetic data accuracy and AI relevance.

4. **How much influence does each stakeholder have on the outcome of the project?**

   Patients – Moderate influence, as their data and feedback shape demand.

   Doctors/Healthcare Providers – High influence, since they decide to adopt and use the tool.

   Pharmaceutical Companies – Moderate influence, through drug development aligned with AI recommendations.

   Hospitals/Clinics – High influence, as they enable large-scale adoption of the tool.

   Geneticists/Biomedical Researchers – High influence, providing critical genetic data and validation.

5. **What is the level of engagement or support expected from each stakeholder?**

   Patients – Moderate engagement, providing genetic data and feedback.

   Doctors/Healthcare Providers – High engagement, using and trusting the AI tool in treatment plans.

   Pharmaceutical Companies – Moderate support, adapting drugs and collaborating in research.

   Hospitals/Clinics – High support, implementing and integrating the tool into daily operations.

   Geneticists/Biomedical Researchers – High support

6. **Are there any conflicts of interest between stakeholders? If so, how can they be addressed?**

   Patients vs. Insurance Companies – Disagreements over coverage; addressed by clear policy guidelines.

   Doctors vs. Pharmaceutical Companies – Potential bias from drug companies; addressed by independent research validation.

7. **How will you communicate and collaborate with stakeholders throughout the project?**

   Regular updates, meetings, and feedback loops will be used to communicate and collaborate with stakeholders throughout the project.

8. **What potential risks do stakeholders bring to the project, and how can these be mitigated?**

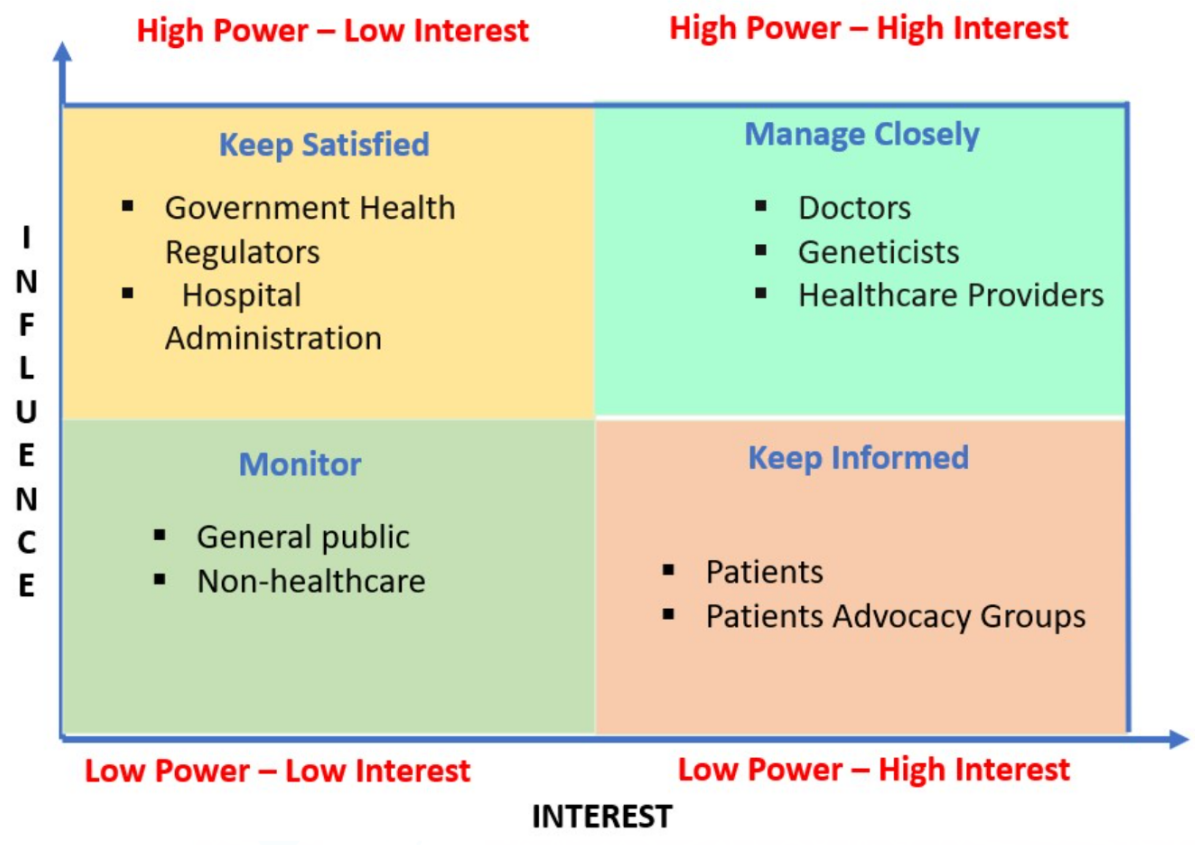
   Data Privacy Concerns: Collecting and storing patient data, like genetic information, can be risky because if this sensitive information gets leaked or misused, it could harm patients. To keep data safe, healthcare providers should use strong encryption (to protect data) and anonymization (to hide personal details).

   Ethical Issues: There are ethical challenges with genetic manipulation, getting proper patient consent, and ensuring fairness in treatment. Clear ethical rules should be made to guide the use of genetic data and treatments.

   Funding and Resource Allocation: Personalized medicine can be costly due to the technology and research involved. Public funding and private partnerships can help share the costs and make these treatments available to more people.

6. Power Interest Matrix of Stakeholders

Power Interest Matrix:



- High Power, High Interest: [Doctors, Geneticists, Healthcare Providers]
- High Power, Low Interest: [Government Health Regulators, Hospital Administration]
- Low Power, High Interest: [Patients, Patient Advocacy Groups]
- Low Power, Low Interest: [General public, non-healthcare entities]