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# Breaking Barriers: ProPharma's RCO Model and AI Solutions Propel Diversity in Clinical Trials for Inclusive Healthcare Innovation

In pursuing groundbreaking clinical development advancements, one critical piece of the puzzle often needs to be addressed - the diversity of clinical trial participants. This underrepresentation of minorities in clinical trials makes achieving fair healthcare outcomes and addressing health disparities more difficult.
To help combat the lack of diversity in clinical trials, this paper will address barriers to clinical trial participation for underrepresented and diverse populations and outline key strategies for increasing diversity in clinical trials. ProPharma's Research Consulting Organization (RCO) model drives collaboration with clients and strengthens the flexibility to meet the needs and demands unique to our partners. We understand that every client's needs are different and by utilizing an RCO model, we can provide a fit-for-purpose solution for our clients. The model acknowledges that every client's needs are different, providing a fit-for-purpose solution for our clients.

**The lack of diversity in clinical trials can be attributed to several key factors, including:**

- **Mistrust of the medical system and cognitive biases:** Historical mistreatment and unethical practices in medical research have created distrust among certain communities, leading to reluctance to participate in clinical trials.
- **Limited access and awareness:** Some communities may face barriers in accessing healthcare facilities or be unaware of ongoing clinical trials, reducing their participation.
- **Regional Barriers:** Certain zip codes may significantly impact healthcare access and compliance.
- **Language and cultural barriers:** Language and cultural differences can hinder effective communication between researchers and potential participants, impacting recruitment efforts.
- **Study Design/ Underrepresentation in Trial Recruitment:** Trial recruitment strategies may not adequately target diverse populations, leading to low participation rates from certain demographic groups.

Addressing these issues requires proactive efforts from researchers, healthcare providers, and policymakers to improve diversity in clinical trials. Increased community engagement, culturally sensitive recruitment strategies, and building trust through transparency and inclusivity are essential steps to achieve more diverse and representative trial populations. This helps ensure that medical treatments and interventions are applicable and effective for all individuals.

**“Addressing these issues requires proactive efforts from researchers, healthcare providers, and policymakers to improve diversity in clinical trials.”**

To develop a safe and effective treatment for various patients, knowing how a drug or medical intervention works and how it affects particular groups of people in clinical trials is important. By doing this, the treatment can be tailored to each patient group's specific needs and characteristics. Precision medicine is an approach that customizes health care for each patient based on their expected outcomes. It considers genetics, environment, and lifestyle factors to design the best treatment plan for everyone.

The need to have a clinical trial with a diverse group of participants is crucial when examining medicine or medical interventions that assist in examining the variations of how different individuals respond to a treatment. Whether these variations are due to genetic, physiological, or environmental factors, identifying the differences in treatment responses across diverse populations, researchers can gain greater understanding into treatment options and how it interacts with various patient characteristics. Additionally, having diversity in clinical trials is essential for advancing the field of precision medicine by tailoring medical treatments to individual patients based on their unique characteristics such as genetics biomarkers and lifestyle.

## I. Problem Statement

Clinical trials are the key component of medical research, often leading to advancements in healthcare treatments, therapies, vaccines, and diagnostic procedures. It is challenging to fully understand human responses to health care due to the lack of diversity among clinical trial participants. To address the underrepresentation and further shed light on the factors that contribute to the lack of diversity within clinical trials, it is crucial to investigate the causes for these barriers that prevent minority populations from taking part in clinical trials.

There have been historical instances of exploitation, discrimination, or mistreatment in clinical research that have caused skepticism and led potential participants to perceive that a clinical trial is not in their best interest and that they may be exposed to unnecessary risks or harms.

Some reasons are cited in an article titled. "Challenging Assumptions About Minority Participation in US Clinical Research" written by Jill A. Fisher, PhD, and Corey A. Kalbaugh, MS, MA[1]:

- Doubt the veracity and accuracy of the trial data
- Researchers' intents and motivations
- (Patient feeling of) no autonomy or control over the trial process
- (Patient feeling of) not getting enough assistance, information, or feedback during interactions with health care professionals

These reasons can create barriers to informed consent, motivation, and adherence, essential for successful clinical trial participation. Additionally, cognitive biases stemming from patients' fears of incorrect diagnoses, doctors making snap judgments about the patient, and concerns about their treatment by healthcare providers can also serve as significant barriers to achieving diversity in clinical trials.

Cultural and language barriers can significantly contribute to low clinical trial participation. These barriers can create obstacles for individuals from diverse backgrounds, potentially limiting their willingness or ability to participate in clinical trials. Language barriers can hinder effective communication between potential participants and researchers or healthcare providers. Understanding a clinical trial's purpose, risks, and benefits are crucial for making an informed decision to participate. Suppose potential participants cannot fully comprehend the information provided or ask questions in their native language or in a manner for which they are comfortable. In that case, they may be hesitant to enroll. Cultural preconceptions and misperceptions about medical research might also discourage people from taking part because they may worry about intrusive procedures, the use of placebos, or the potential adverse effects of experimental treatments.

Lack of awareness and knowledge about clinical trials is one of the main obstacles to minority populations participating in clinical trials. Many people from underrepresented groups might need access to sufficient information about ongoing trials, understand the goal of clinical trials, or

become aware of the potential advantages clinical trials may present. This lack of knowledge can lead to reluctance or hesitation to participate, which can help explain why minority populations are underrepresented in clinical research.

Socioeconomic barriers may also hamper participation in clinical trials. These challenges arise from the limited access to healthcare facilities, transportation to research sites, and the inability to take time from work to participate. Some people may live in regions with limited access to healthcare facilities where clinical trials and other specialized treatments and procedures are unavailable.

Geographic isolation can limit access to resources, education, health care, and information for some communities, leading to poverty, inequality, and marginalization. Sometimes, the lack of affordable, reliable, and safe transportation options can also limit access to health care services and the ability to participate in clinical trials.

Moreover, financial hardships, such as being unable to take time off from work and pay for childcare, are societal barriers that can also contribute to the low participation of clinical trials amongst lower income people. Another significant barrier to achieving diversity in clinical trials is the need for high-speed internet access in rural and lower-income urban areas. Without it, digital deserts could exist, making it difficult for people to participate in clinical trials that require innovative technology.

> **“By generating a specific prospective plan outlining the goals for enrollment of underrepresented racial and ethnic subjects, a plan of action to enroll those patients can ensure diversity in the patient population.”**

Some drug companies may not be fully aware of or fully compliant with regulations and guidelines regarding diversity in clinical trials. However, regulatory agencies and international organizations have taken steps to emphasize the importance of diversity and inclusivity in clinical research. In April 2022, the FDA (Food and Drug Administration issued a Guidance for Industry recommending that Sponsors include a plan to include diversity in their proposed IND (Investigational New Drug) submissions.[7] By generating a specific prospective plan outlining the goals for enrollment of underrepresented racial and ethnic subjects, a plan of action to enroll those patients can ensure diversity in the patient population.

The agency advises sponsors to “seek diversity in clinical trial enrollment beyond patient populations defined by race and ethnicity, including others that are underrepresented populations defined by demographics such as sex, gender, age, socioeconomic status, disability, pregnancy status, lactation status, and comorbidity.” The recommendations from the FDA include the development of a formal plan that outlines how operational measures will be implemented in clinical trials. The core components of the diversity plan include:

- Overview of the disease/condition
- Scope of the medical product development Program
- Goals for enrollment of underrepresented racial and ethnic subjects
- Specific plan of action to enroll and retain the diverse participants
- Status of meeting the goals of enrollment

## II. Analysis

Health disparities refer to the differences in health outcomes and access to healthcare services among different populations or demographic groups. These disparities can be observed based on race, ethnicity, gender, socioeconomic status, and geographic location. Social determinants of health such as education level, housing conditions, and environmental conditions (e.g., air quality, water quality) can also significantly influence health disparities.

Health disparities can manifest in several ways, including[2]:

- **Limited Access to healthcare:** Some communities may have limited access to quality healthcare facilities, medical professionals, or health insurance coverage, resulting in delayed or inadequate medical care.
- **Poorer Health outcomes:** Certain groups may experience higher rates of specific diseases or health conditions, leading to differences in mortality and morbidity rates.
- **Suboptimal Health behaviors:** Disparities can also be related to health behaviors, such as diet, exercise, and tobacco use, contributing to varying health outcomes among different populations.

Health disparities are a complex issue and often stem from historical, societal, economic, and systemic factors.

Addressing health disparities requires targeted efforts and policies to promote equity in healthcare access, improve health education, and reduce socioeconomic barriers that affect health outcomes. Governments, healthcare organizations, and communities work together to tackle these disparities and promote health equity for all individuals.

> **“Clinical trial diversity plays a crucial role in addressing health disparities and promoting health equity.”**

Clinical trial diversity is crucial in addressing health disparities and promoting health equity. The inclusion of a diverse range of participants in clinical trials can have several benefits:

- **Consideration of patient representation.** By involving individuals from various racial, ethnic, gender, and socioeconomic backgrounds, clinical trials can better represent the broader population that the medical treatments or interventions will eventually serve. This ensures that the findings are applicable and effective for all groups.
- **Understand the implication of efficacy and safety of the treatment.** Different populations may respond differently to treatments due to genetic variations and other factors (e.g., social, genetic). Diverse participation in clinical trials helps identify potential differences in treatment efficacy and safety across various groups, allowing researchers to tailor treatments for specific populations.
- **Identify the disparities that exist among patients.** Clinical trials with diverse participants can help identify health disparities and underlying factors that contribute to differences in disease prevalence, progression, and outcomes among different demographic groups.
- **Ensure patient trust and engagement is paramount to addressing health disparities.** Inclusivity in clinical trials fosters trust among underrepresented communities, demonstrating that researchers value their health and well-being. This can lead to increased engagement and participation in medical research.
- **Examine how relevant policies and regulations should be applied.** Regulatory bodies often encourage or require diversity in clinical trials to ensure that treatments are thoroughly evaluated across different populations before approval and widespread use.

Enhancing our understanding of precision medicine and acknowledging the diversity of patient characteristics can contribute to a deeper comprehension of specific medical diseases and potential treatment strategies. Certain diseases have varying prevalence rates among different racial and ethnic groups. Here are some, specific examples:

- **Hypertension:** Hypertension is more prevalent in African Americans compared to other racial groups.[3]
- **Diabetes:** Type 2 diabetes is more commonly seen in Native Americans, African Americans, and Hispanics. The estimated number of adults with diabetes in 2007 was 246 million; of these, 80% live in developing countries, the most significant numbers on the Indian subcontinent and in China.[4]
- **Sickle Cell Disease:** This genetic condition is more prevalent in individuals of African, Mediterranean, Middle Eastern, and South Asian descent.[5]
- **Cystic Fibrosis:** It is more common among individuals of European descent.[6]

It is important to note that a combination of genetic, environmental, and socioeconomic factors can influence disease prevalence. Moreover, healthcare disparities and access to medical services can also impact disease rates among different racial and ethnic groups.

## III. Proposed Solution

ProPharma's novel approach as an RCO can be utilized to develop a bespoke solution to help diverse patient enrollment strategies for the sponsor's clinical trials:

### Proposed Solutions

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| **Collaboration:** Collaborating with patient advocacy groups and regulatory bodies to better understand the community and address potential questions and concerns is important. | **Inclusive Outreach:** Develop marketing and outreach materials with diverse representation and language accessibility to appeal to a broader range of participants. |
| **Community Engagement:** Service organizations can engage with local communities, advocacy groups, community leaders, local medical groups/providers, non-profit organizations, etc. | **Inclusivity in Inclusion/Exclusion Criteria:** Revisiting and challenging the design of inclusion/exclusion criteria to be more inclusive of diverse patient profiles can expand the patient pool. |
| **Cultural Competence:** Ensuring that study staff have been trained in cultural competency, are culturally competent, and are sensitive to the needs of diverse patients can improve enrollment. | **Incentives and Compensation:** Offering reasonable incentives and compensation for participation can spur interest and reduce barriers. |
| **Data Collection and Analysis:** Collecting and analyzing data on demographics and patient characteristics can help identify areas for improvement. Be transparent about how data will be used and protected, addressing concerns about privacy and misuse. | **Language Accessibility:** Providing patient-facing study materials (e.g., informed consent forms and patient surveys) and interpreters in multiple languages can remove language barriers. |

## Proposed Solutions

**Diversity in Trial Leadership:** Having diverse trial leadership and research teams can inspire confidence in potential participants.

**Patient-Centric Approach:** Designing studies with a patient-centric approach, considering the unique needs and preferences of diverse populations.

**Feedback Mechanisms:** Establish accessible mechanisms for participants to provide feedback and voice concerns, ensuring they feel heard and valued.

**Patient Education:** Providing educational materials about clinical trials tailored to specific communities can educate, demystify, and address misconceptions. Ensuring the images and language used represent and connect to the community and not a single demographic.

**Flexible & Inclusive Clinical Trial Design:** Flexible trial designs, such as adaptive trials, can accommodate varying patient needs. Having relevant tools for patients, e.g., Dermatology trials- Ensure screening for melanomas or skin reactions are assessed across various skin tones.

**Regulatory Compliance:** Ensuring compliance with regulatory guidelines regarding diversity in clinical trials is essential.

**Follow-Up:** Share primary outcomes, next steps, or milestones of the clinical trial with the participants for transparency and awareness.

**Site Selection:** Choosing trial sites in diverse geographic locations with access to a broad patient population can enhance diversity.

By implementing some or all of the above strategies, ProPharma can contribute to more inclusive and diverse patient enrollment in clinical trials, improving the generalizability of study results and healthcare outcomes for all populations. Solutions to overcome the barriers to recruiting and retaining patients from minority populations in clinical trials require thoughtful strategies to address the obstacles and build trust.

# IV. Implementation

In addition to the proposed solutions, we have many technology offerings at our fingertips to help mitigate the need for more diversity in clinical trials.

ProPharma utilizes an internal AI (Artificial Intelligence) platform that collates information from various sources and pairs them with a patient identifier to outline diversity attributes such as race and ethnicity, socioeconomic information, and education level.

These patients are then linked to specific centers and Investigators, which provide an output of where various populations can be found. While the tool offers directional guidance for what sites may be solid fits for which clinical trials, it gives the opportunity for robust feasibility studies to confirm patient availabilities.

> **“We have technology at our fingertips to assist in mitigating the lack of diversity in clinical trials.”**

An RCO ensuring diversity in clinical trials is crucial to generalize results, identify variations in treatment response, and promote ethical and equitable access to healthcare innovations. AI tools access billions of procedure codes and more than three million diagnosis codes, representing approximately 200 million patients annually. By pooling claims data and summarizing trends of specific demographic information, AI provides a deeper lens into the types of patients that require care for particular indications that may vary by gender and race; we can be better informed about where optical locations are for clinical trials to be conducted.

One strong use of AI is to provide directional guidance for the pre-identification of potential subjects, which helps to best identify the most promising sites that can deliver a clinical trial. This added layer of intelligence is critical for ensuring diverse patient populations are more readily identified and the benefits from the potential investigational treatments and the therapies clinical trials may offer are realized.

## V. Conclusion

In summary, diverse patient populations must be enrolled in clinical trials. Addressing the lack of diversity in clinical trials is not just a matter of social equity but a fundamental necessity for advancing healthcare and ensuring that medical treatments are effective and safe for all individuals. As several known contributing factors may limit the lack of diversity, Sponsors, RCOs, and CROs (Contract Research Organizations) must prioritize the operational strategy of ensuring underrepresented populations are included in trials, and the strategies for developing best practices from lessons learned via historical experience.

These strategies must become the new norm. The lessons learned from the inadequate patient population in current and past clinical trials range from increasing health disparities amongst racial groups to improving drug efficacy and safety variability across all individuals.
The proposed strategies and technological advancements highlighted in this paper provide a path forward to a future where healthcare innovations benefit everyone regardless of race, ethnicity, socioeconomic status, or cultural background. By implementing these measures, we can move closer to a world where health disparities are reduced and healthcare truly becomes accessible and effective for everyone.

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