

# HOW CAN WE MAKE A CLINICAL TRIAL SUCCESSFUL

## WHAT IS A CLINICAL TRIAL?

A clinical trial is a type of research that studies a test or treatment given to people. When tests and treatments are found to be safe and helpful, they may become tomorrow's standard of care.



## WHAT MAKES A CLINICAL TRIAL SUCCESSFUL?

A clinical trial is deemed successful if the study is **completed**, **has results** or has been **approved for marketing**. A trial must also have the following design attributes:



## AN OVERVIEW OF SUCCESSFUL CLINICAL TRIALS

Only **1678** out of **64,698** trials satisfy our criteria of successful trials, representing **2.59%** of the total clinical trials

Enrollment size average for the trial is **383** and median is **118**

Study duration for an average trial is **2.88** years (compared to average: 28% shorter)

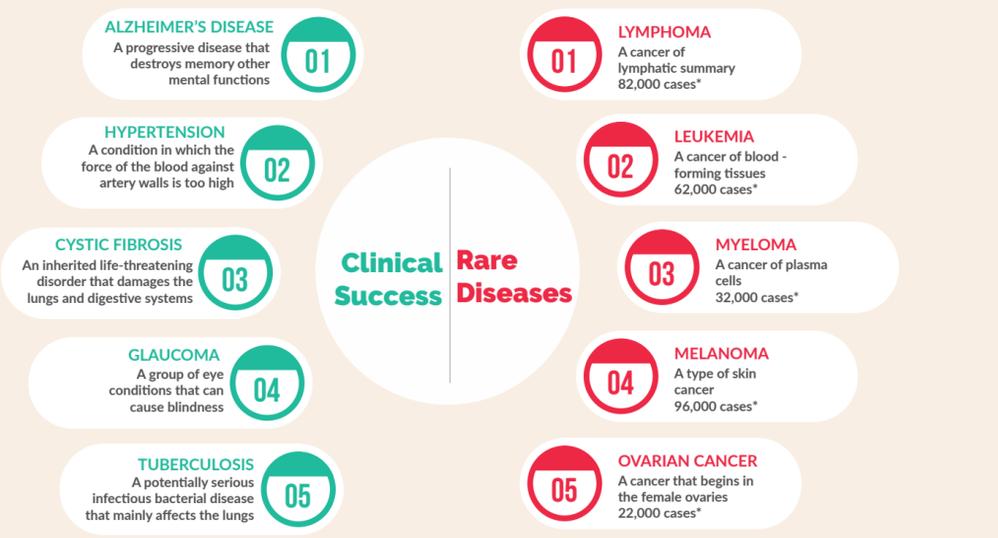
Top sponsors of successful trials are **private companies** and **78%** were funded by a single source

**64%** of our studies were conducted in a single location and **41%** were conducted only in US

## MOST STUDIED CONDITIONS

Among the successful studies above, we also identified the Top 5 conditions with the most clinical trials. These trials represent different rarity of diseases, from very common to rare.

In the United States, a rare disease is defined as a condition that affects fewer than 200,000 people. According to our data, these are the top 5 most studied conditions in US from 1966 - 2019.

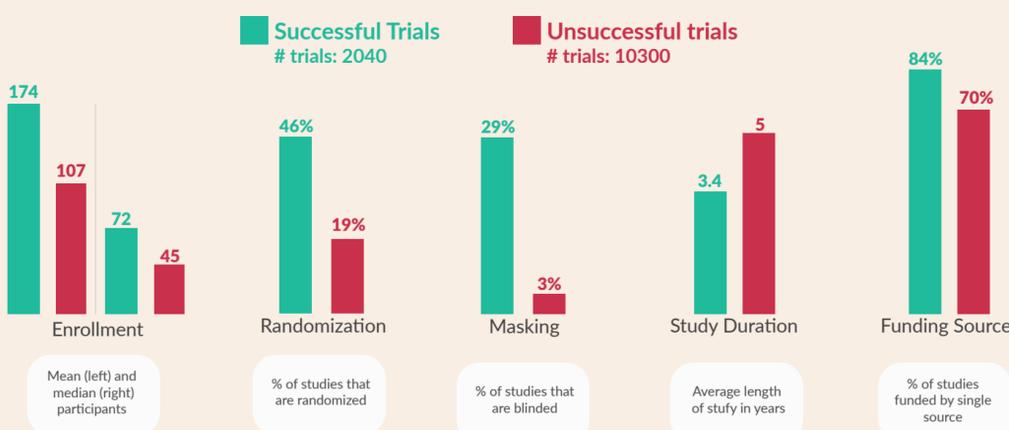


\* Expected number of cases in 2019 in US

## HOW DO SUCCESSFUL TRIALS COMPARE TO RARE CONDITIONS TRIALS

We compared the top five conditions with most **successful** trials with top five **most studied** conditions.

- We categorized the trials into three main components:
1. Participants - The patients or humans in the trial
  2. Sponsors & Funders - The institutes or authorities who manage and funds the trial
  3. Study Design - Attributes associated with the trials



Successful clinical trials are more likely to be sponsored by a private company, whereas unsuccessful trials are often sponsored by National institutes and medical centers

## INSIGHTS AND FINDINGS

### PARTICIPANTS



We found that while Age category and Gender category are similar for both successful and unsuccessful trials, the enrollment size for the successful studies were larger than that of the unsuccessful ones. The intuition is that trials with larger enrollment size allow for more randomization and masking in study design and more chances of approximating the testing effects of the intervention type on real world.

### STUDY DESIGNS



We found the most interesting differences between these two groups are Randomization and Masking which are more prevalent in successful trials. Randomization helps prevent bias due to human choices or other unrelated factors. Masking helps reduce the risk of bias due to the awareness of the intervention assigned to participants. While we don't have any evidence supporting the shorter duration leading to a more successful trial, we think that study duration tends to be shorter in successful trials, possibly because of a better study design.

### SPONSORS



Clinical trials conducted by private company are often affected by the company's business objectives rather than medical purposes, which may introduce bias in the outcome measures and study results because business objectives tend to encourage quicker completion of trials

## RECOMMENDATIONS

- 01 Have larger enrollment size
- 02 Randomize the participants in group allocations
- 03 Have an appropriate blinding designed study
- 04 Establish objectives that represent both medical purposes & business goals

Realizing that these recommendations can be hard to execute for rare disease clinical trials, For instance a large enrollment size, we recommend that rare disease clinical trials should be conducted in multiple locations and countries to achieve a large enough enrollment size that is already diversified due to the variety and difference in locations and venues



## TEMPLE ANALYTICS CHALLENGE

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