Clinical Trials

Phase I clinical trials consist of drug safety studies in healthy humans

Drug is tested on 20 to 30 healthy volunteers to determine toxicity relative to dose and to screen for unexpected side effects. The tests determine a drug's safety profile, including the safe dosage range, plus how the drug is absorbed, distributed, metabolized and excreted, and the duration of its action. Phase I trials take on the average of 1 year.

 Investigate: - Safety and tolerability

 - Pharmacokinetics

 - Pharmacodynamics

Phase II clinical trials test whether a drug works in a small number of patients affected by the disease

Drug is tested on small group (100 to 500 patientvolunteers) to see if drug has any beneficial effect and to determine the dose level needed for this effect. They are done to assess the drug's effectiveness. Phase II typically takes about 2 years.

 Investigate: - Safety and tolerability

 - Pharmacokinetics

 - Pharmacodynamics

- Efficiency

 - Dosage to effect relationship

 Study design: - Dosage comparison

Antitumor drugs:Combination of *Phase I* and *II* at an early stage of drug development is possible.

Phase III clinical trials test large numbers of patients

Drug is tested on much larger group of patients (up to 1000 or more) and compared with existing treatments and with a placebo.Monitor reaction to long term drug use. Phase III takes on the average 3 years.

Study design: - Comparison to placebo or to standard therapy

- Multicentre and multinational trials

Overall aim of Phase III: Risk-benefit evaluation

Phase III studies are *“pivotal studies”* - outcome is crucial for the decision taking of the regulatory authorities.

New Drug Application (NDA)

 Following the Phase III Clinical Trials, the drug manufacturer analyzes all the data from the studies and files an NDA with the FDA (provided the data appear to demonstrate the safety and effectiveness of the drug). The NDA contains all of the data gathered to date about the drug. (An NDA typically consists of at least 100,000 pages.) The average NDA review time for new drugs approved in 1992 was close to 30 months (2 1/2 years).

To receive approval, the drug/therapy must:

* be safe;
* be effective;
* have benefits that outweigh the risks;
* have accurate labeling;
* and be producible in a consistent quality and purity.