An NDA at the FDA

Understanding the Drug Approval Process

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Professional Affairs and Stakeholder Engagement

Objectives

- *What are the statutory requirements for drug approval?*
- *What is the typical timeframe for drug discovery and drug approval?*
- *What are the different approval tracks?*
- *What is expanded access?*

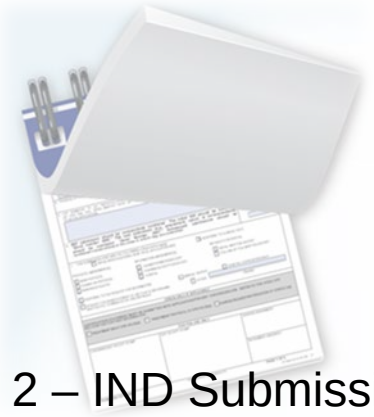
CDER Mission

CDER's mission is to:

- Promote the public health by helping to ensure the availability of **safe and effective drugs**
- Protect public health by promoting the **safe use** of marketed drugs
- Protect public health by helping to ensure the **quality and integrity** of marketed drug products

Six Stages of Drug Development

1 – Pre-Clinical



2 – IND Submission

3 – Clinical Studies

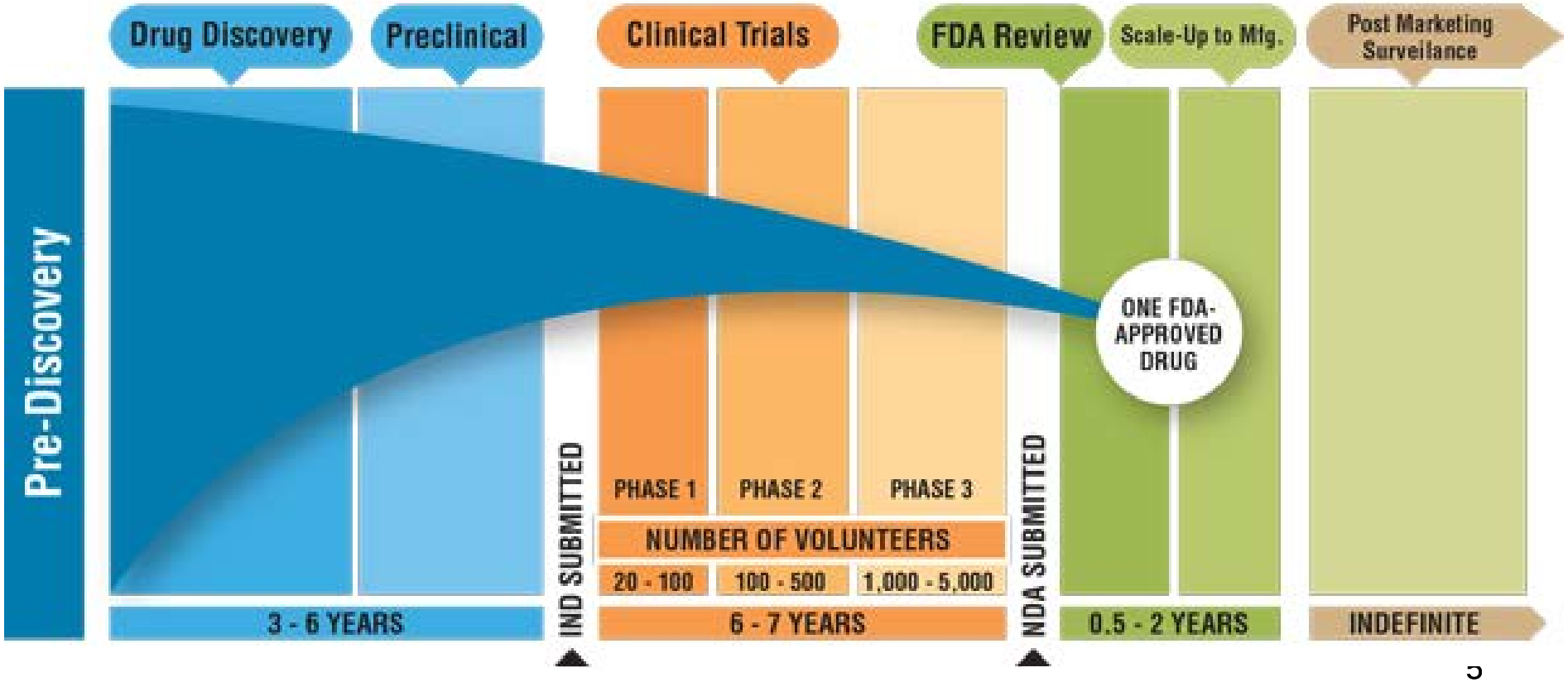
4 – NDA Submission

5 – FDA Review

6 – FDA Action

Drug Discovery Timeline

What role does FDA play in the drug discovery process?



http://www.tech-res-intl.com/TRIbune/Winter-2015/TRITribune-Winter2015-Article3.html

Pre-Clinical

- Drug sponsor's discovery and screening phase

Drug Developed

Drug sponsor develops a new drug compound and seeks to have it approved by FDA for sale in the United States.

Animals Tested

Sponsor must test new drug on animals for toxicity. Multiple species are used to gather basic information on the safety and efficacy of the compound being investigated/researched.

IND Submission

IND Application

The sponsor submits an Investigational New Drug (IND) application to FDA based on the results from intial testing that include, the drug's composition and manufacturing, and develops a plan for testing the drug on humans.

Clinical Studies

- Drug sponsor's clinical studies/trials
- FDA/CDER does not test new drugs

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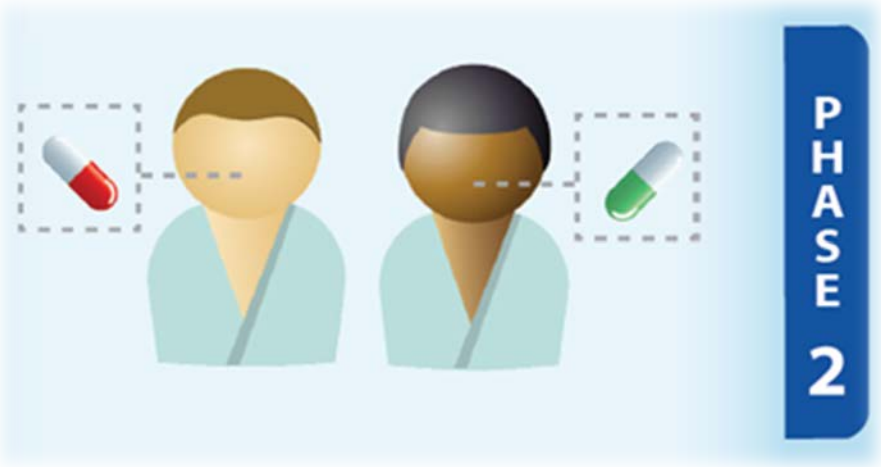

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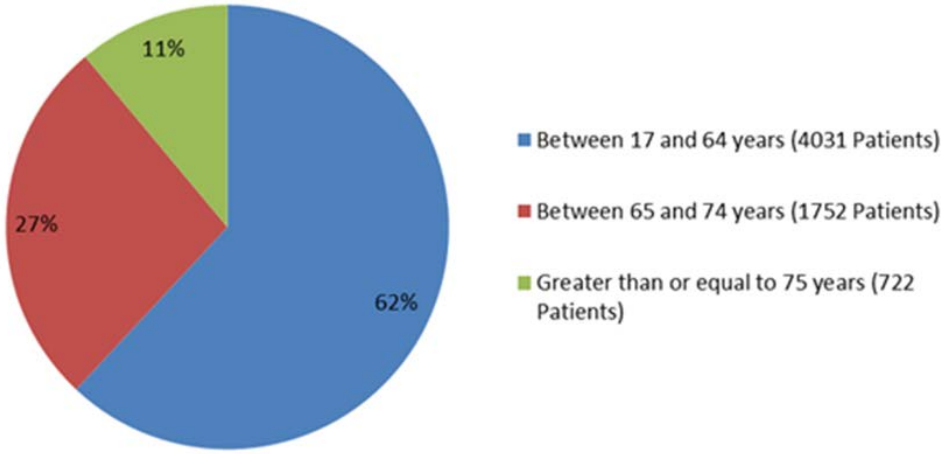
Flexible Trial Design

- FDA supports flexible approach to drug development

Corlanor



XURIDEN				
	Patient 1	Patient 2	Patient 3	Patient 4
Sex	Male	Female	Male	Male
Race	White	White	White	White
Age (years)	6	19	7	3.5

NDA Submission and Review

Who reviews new drug submissions?

A team of CDER physicians, statisticians, chemists, pharmacologists, and other scientists review the drug sponsor's data and proposed labeling of drugs.

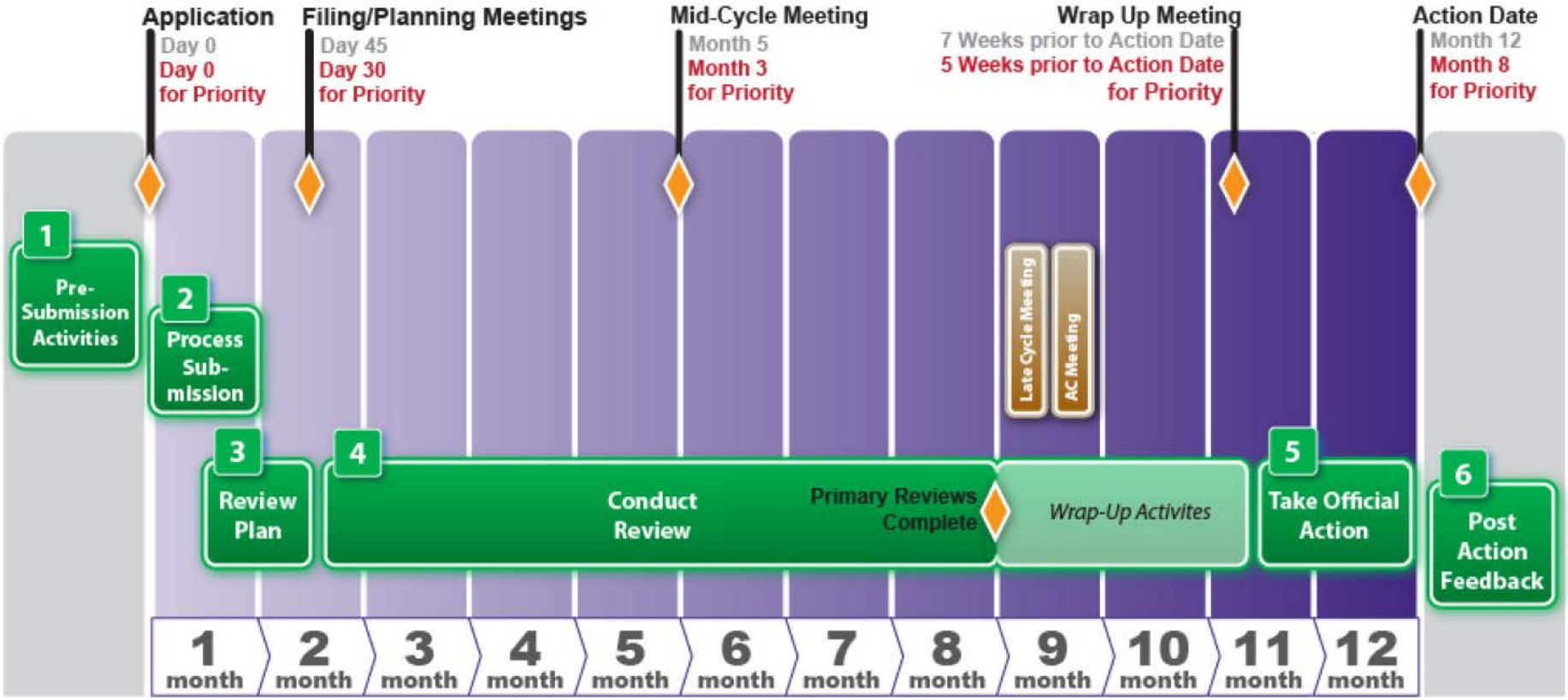
Review Meeting

FDA meets with a drug sponsor prior to submission of a New Drug Application.

NDA Application

The drug sponsor formally asks FDA to approve a drug for marketing in the United States by submitting an NDA. An NDA includes all animal and human data and analyses of the data, as well as information about how the drug behaves in the body and how it is manufactured.

NDA Review Timeline



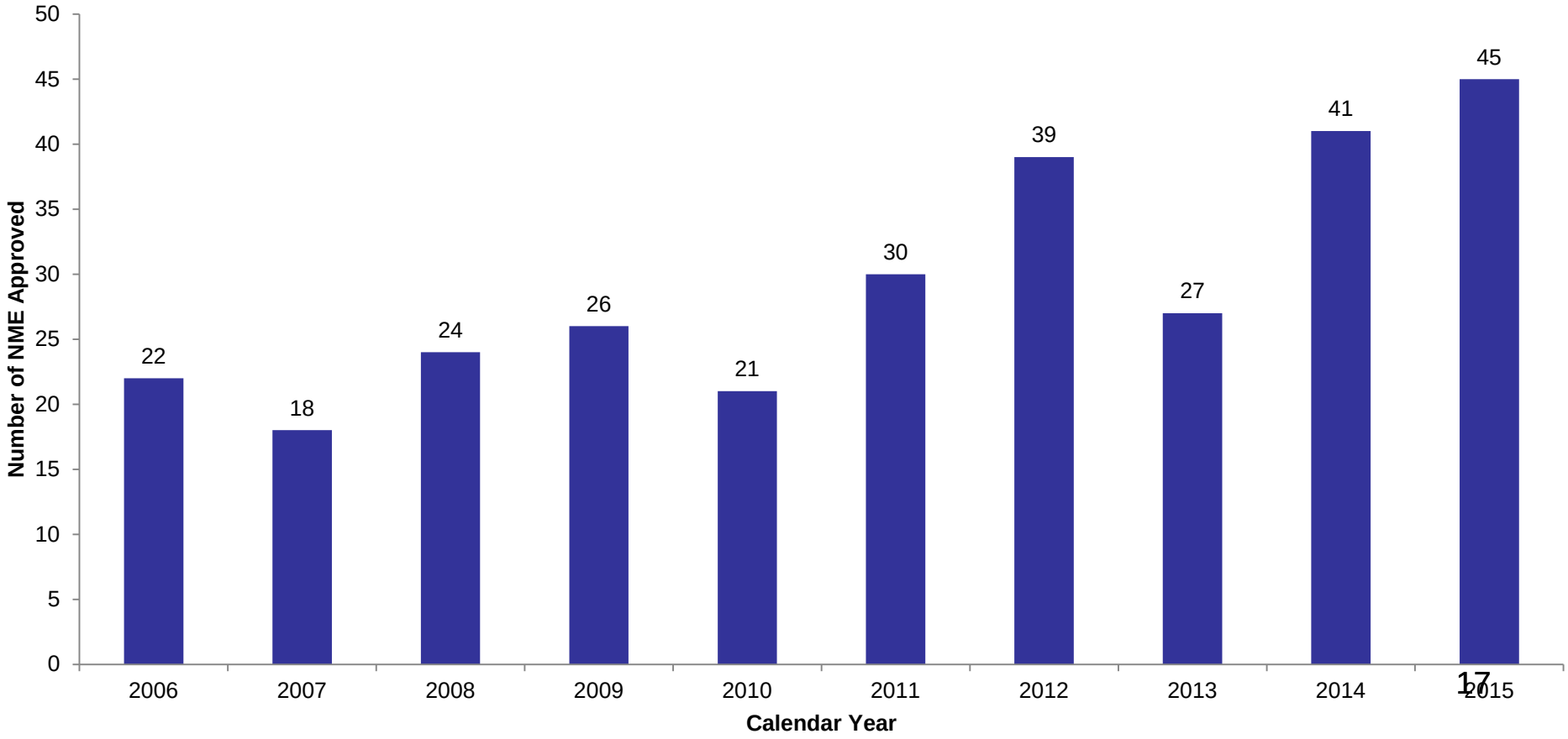
NDA Submission and Review

FDA Action

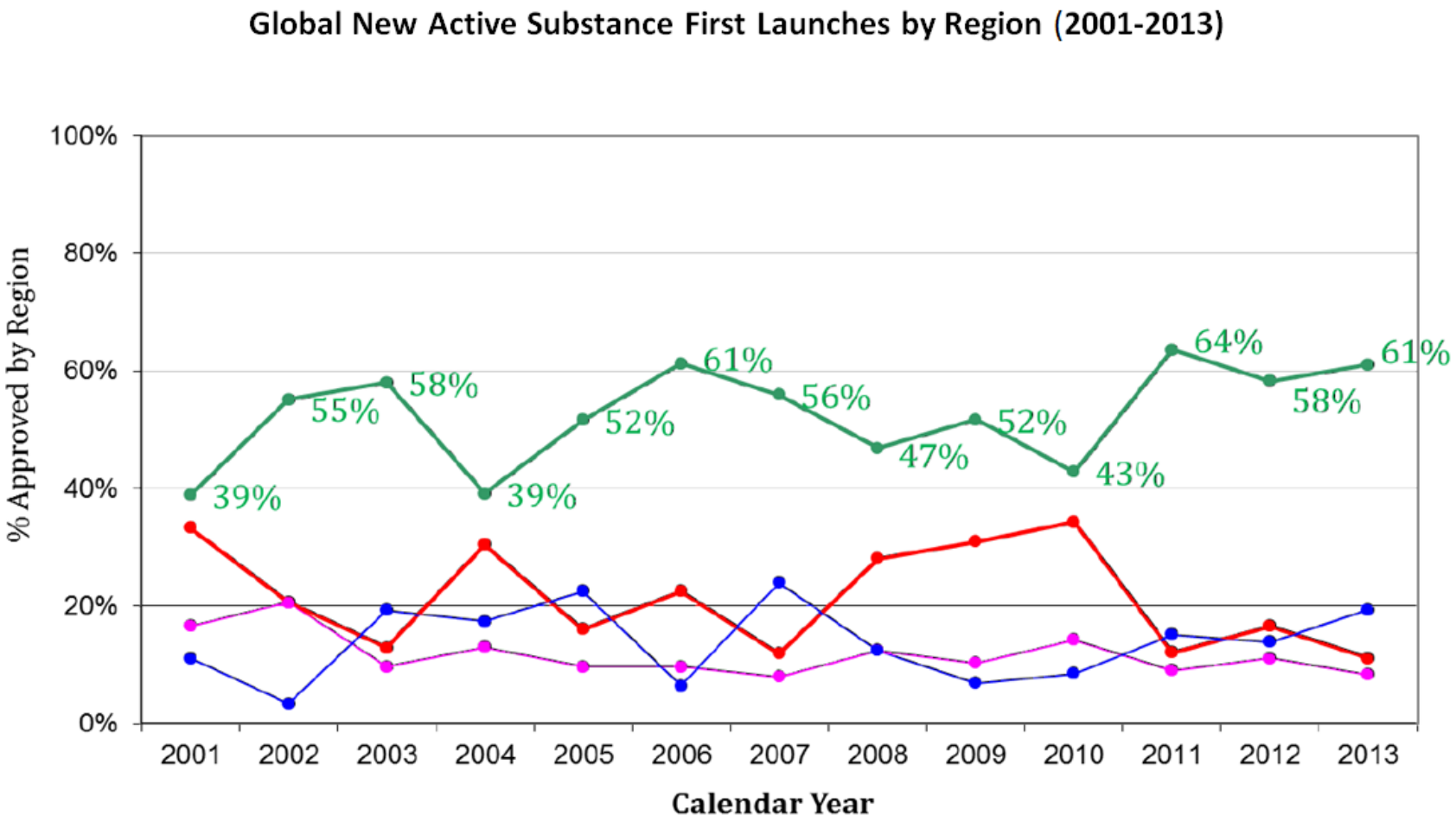
Post-Marketing

- Once FDA approves a drug, the post-marketing monitoring stage begins.
- The sponsor (typically the manufacturer) is required to submit periodic safety updates to the FDA
- Sentinel
- MedWatch

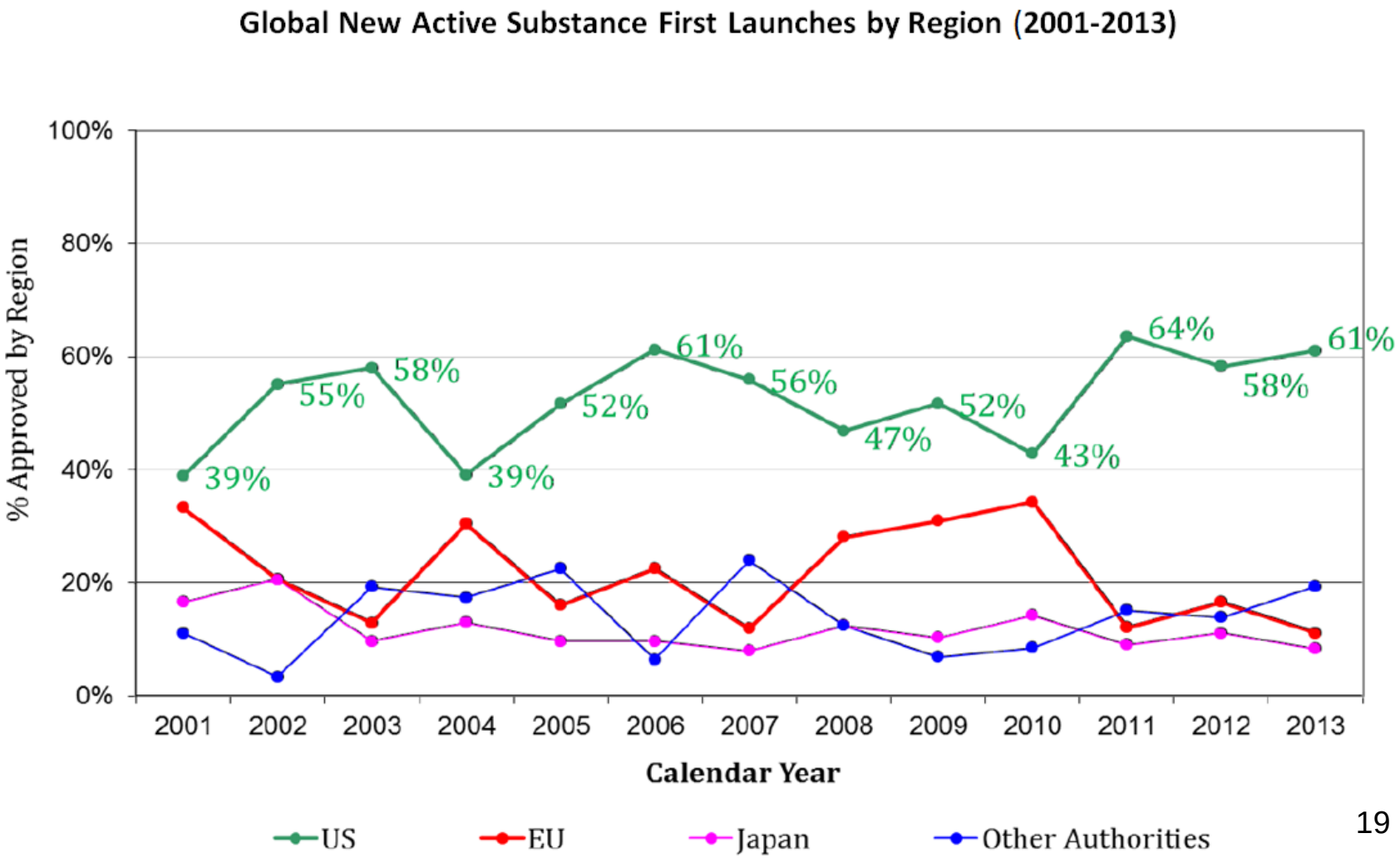
Number of New Drug Approvals



FDA in Drug Approval



FDA in Drug Approval



Source: *Scrip Magazine* (2001 - 2006), *Pharmaprojects/Citeline* **Pharma R&D Annual Review** (2007 - 2014)

Expedited Development Pathways

Fast Track

Fast track is a process designed to facilitate the development, and expedite the review of drugs to treat serious conditions and fill an unmet medical need.
Fast Track

Breakthrough Therapy

A process designed to expedite the development and review of drugs which may demonstrate substantial improvement over available therapy.
Breakthrough Therapy

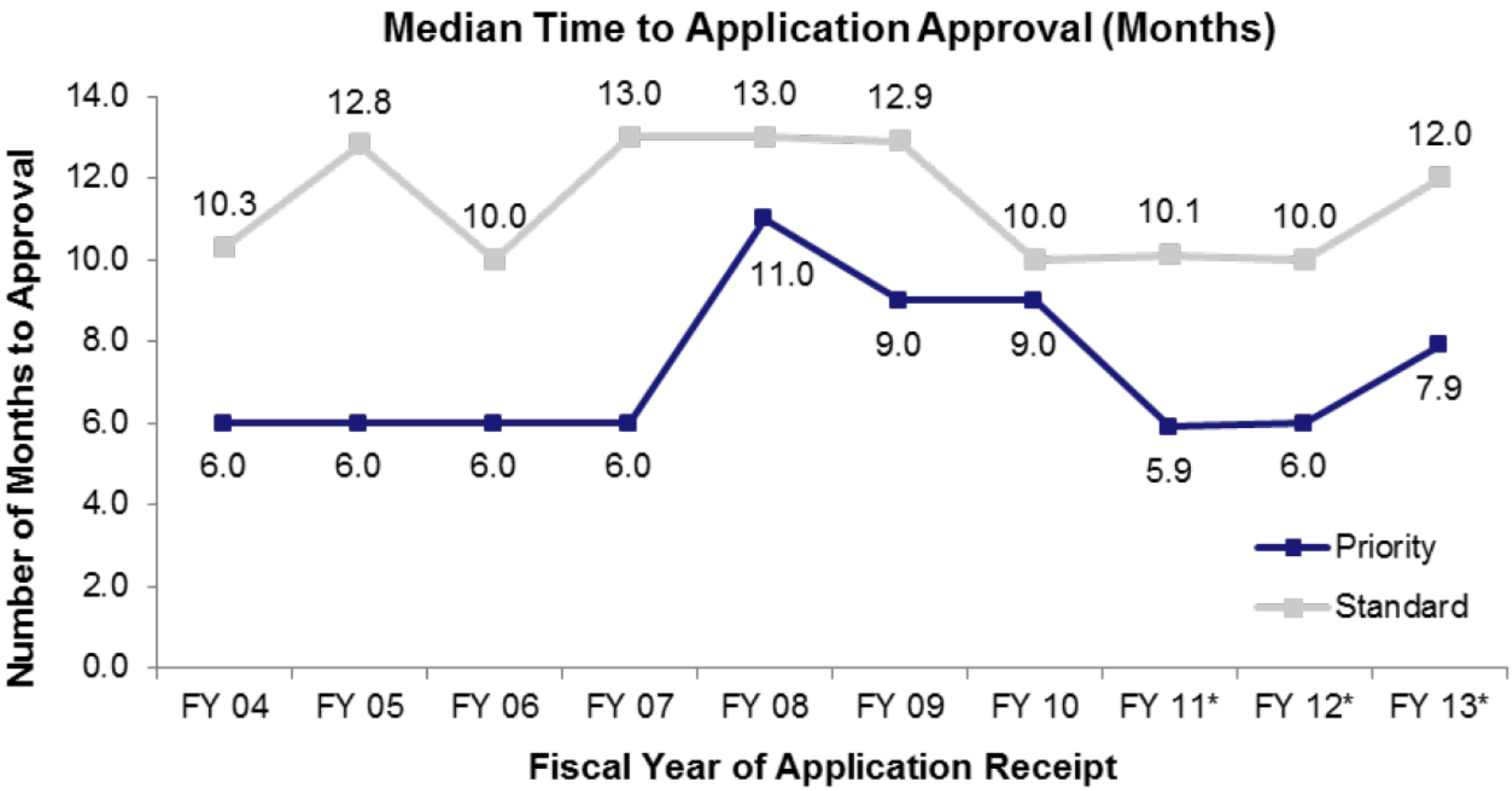
Accelerated Approval

These regulations allowed drugs for serious conditions that filled an unmet medical need to be approved based on a surrogate endpoint.
Accelerated Approval

Priority Review

A Priority Review designation means FDA's goal is to take action on an application within 6 months.
Priority Review

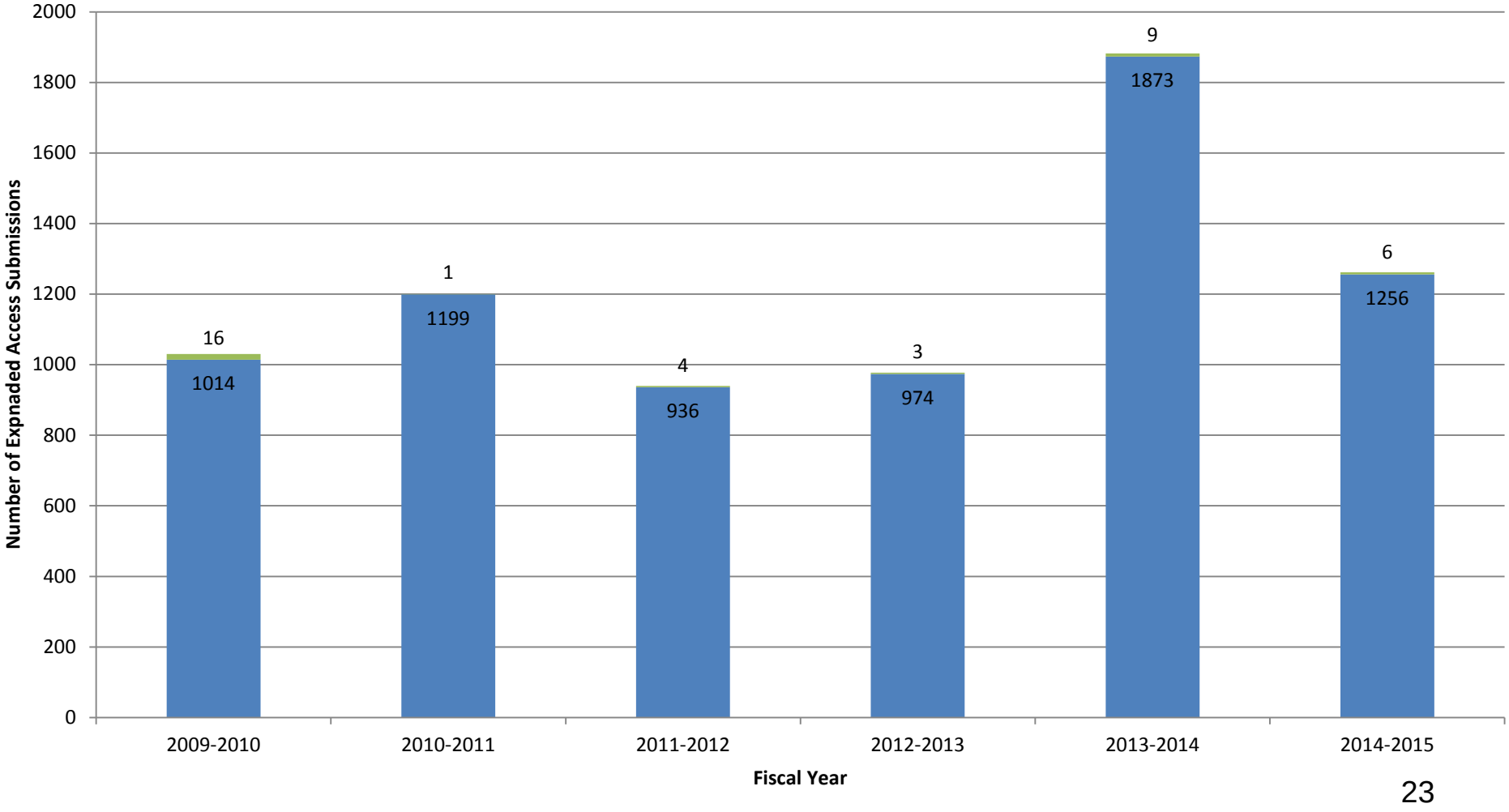
Drug Discovery Timeline



Expanded Access

- What is expanded access?
- Am I protected from risks?
- Will I qualify if I meet the criteria?
- How do I submit an application?

Expanded Access



NDA at the FDA

U.S. Food and Drug Administration

Drug Approval Process

What is a drug as defined by the FDA?
A drug is any product that is intended for use in the diagnosis, cure mitigation, treatment , or prevention of disease; and that tis intended to affect the structure or any function of the body.

PRE-CLINICAL

Drug Sponsor's Discovery and Screening Phase

Drug Developed

Drug sponsor develops a new drug compound and seeks to have it approved by FDA for sale in the United States.

1

Animals Tested

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2

IND Application

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FDA's Center for Drug Evaluation and Research (CDER) evaluates new drugs before they can be sold.

The center's evaluation not only prevents quackery, but also provides doctors and patients the information they need to use medicines wisely. CDER ensures that drugs, both brand-name and generic, are effective and their health benefits outweigh their known risks.

IND REVIEW

FDA reviews the IND to assure that the proposed studies, generally referred to as clinical trials, do not place human subjects at unreasonable risk of harm. FDA also verifies that there are adequate informed consent and human subject protection.

CLINICAL

Drug Sponsor's Clinical Studies/Trials

3

PHASE 1

20-80

The typical number of healthy volunteers used in Phase 1; this phase emphasizes safety. The goal here in this phase is to determine what the drug's most frequent side effects are and, often, how the drug is metabolized and excreted.

4

PHASE 2

100's

The typical number of patients used in Phase 2; this phase emphasizes effectiveness. This goal is to obtain preliminary data on whether the drug works in people who have a certain disease or condition. For controlled trials, patients receiving the drug are compared with similar patients receiving a different treatment--usually a placebo, or a different drug. Safety continues to be evaluated, and short-term side effects are studied.

At the end of Phase 2, FDA and sponsors discuss how large-scale studies in Phase 3 will be done.

5

PHASE 3

1000's

The typical number of patients used in Phase 3. These studies gather more information about safety and effectiveness, study different populations and different dosages, and uses the drug in combination with other drugs.