PDUFA Activities in Drug Development

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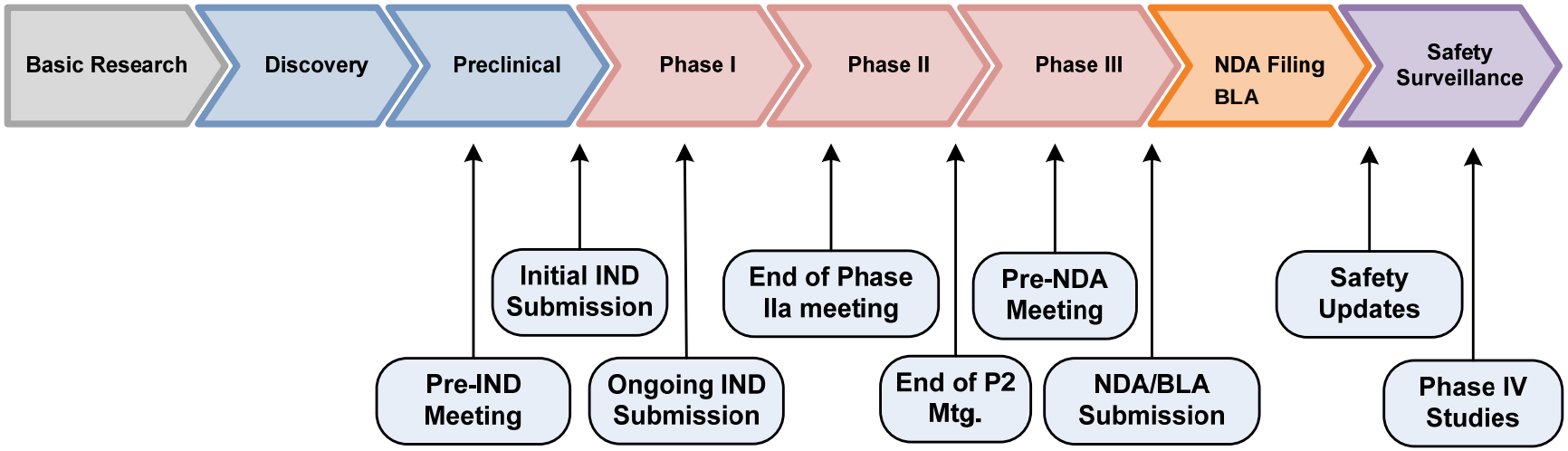
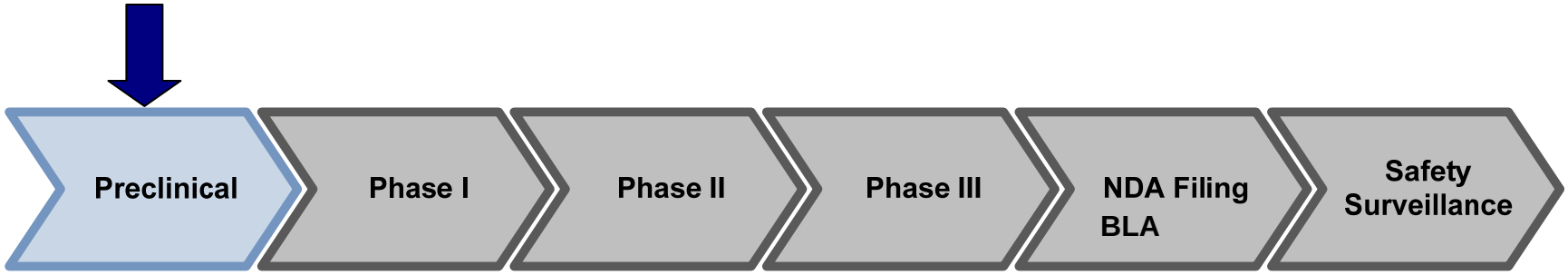
Drug Development Timeline



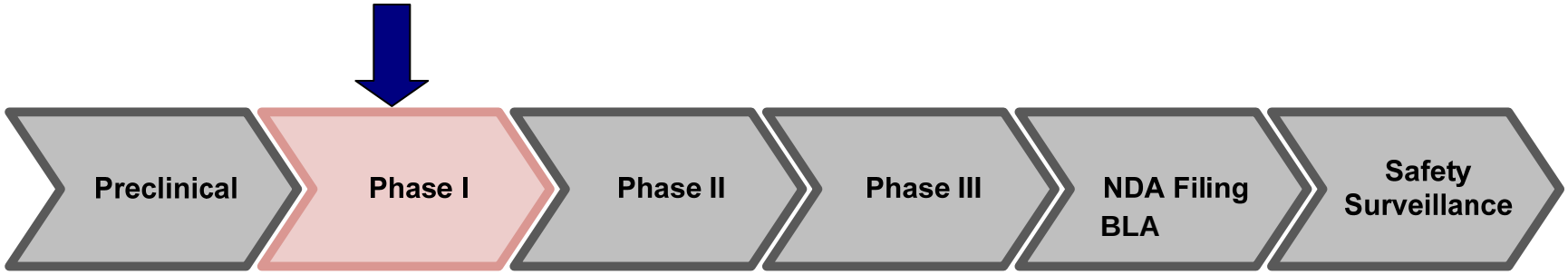
Preclinical Development

- **Preclinical work occurs before a new drug or biologic is tested in humans**
- **Primary goals are to determine whether the product is –**
  - Reasonably safe for initial use in humans
  - Sufficiently effective against a disease target in chemical assay tests or animal models
- **Pre-IND Meeting**



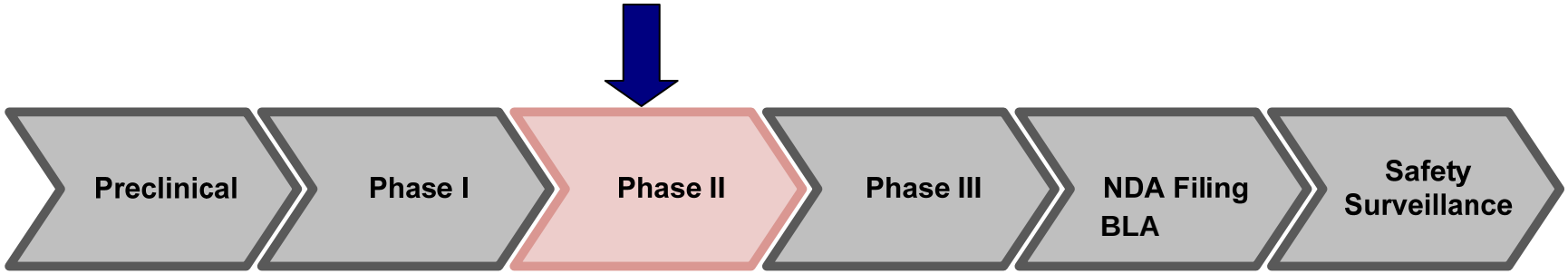
Clinical Development – Phase 1

- **IND submission**
  - Pharmacology/Toxicology Studies
  - Manufacturing Information
  - Clinical Protocols and Investigator Information
- **Primary goals –**
  - Safety profile for the drug in humans
  - Relationship between dosing and the patient's systemic drug exposure



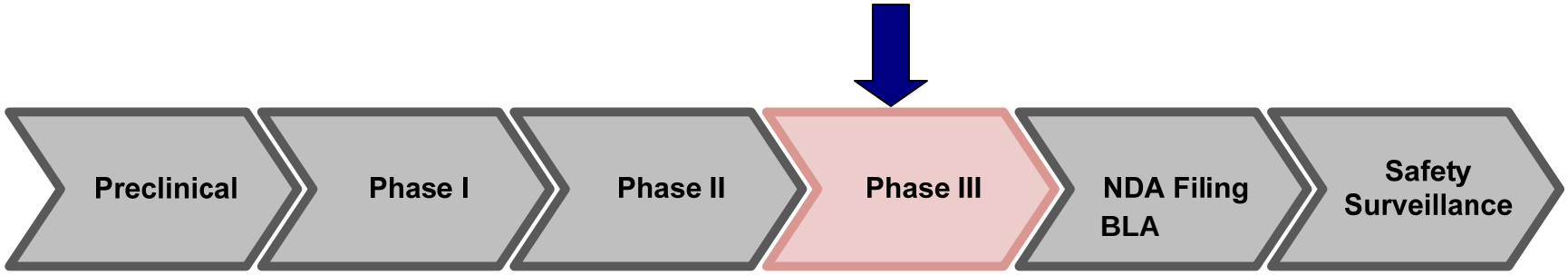
Clinical Development – Phase 2

- **Primary goals –**
  - Effectiveness in people who have a certain disease
  - Relationship between dose and response to the drug
  - Safety evaluation continues
- **End of Phase 2a Meeting**
- **End of Phase 2 Meeting**



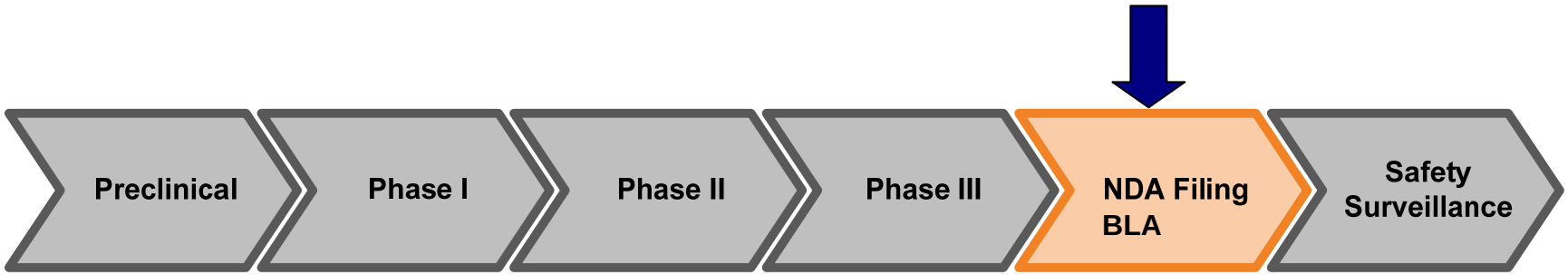
Clinical Development – Phase 3

- **Primary goals –**
  - Continued assessment of effectiveness, duration of effect, effect in different populations, varying dosages
  - Safety evaluation continues, including potential drug-drug interactions
- **Pre-NDA / Pre-BLA Meeting**



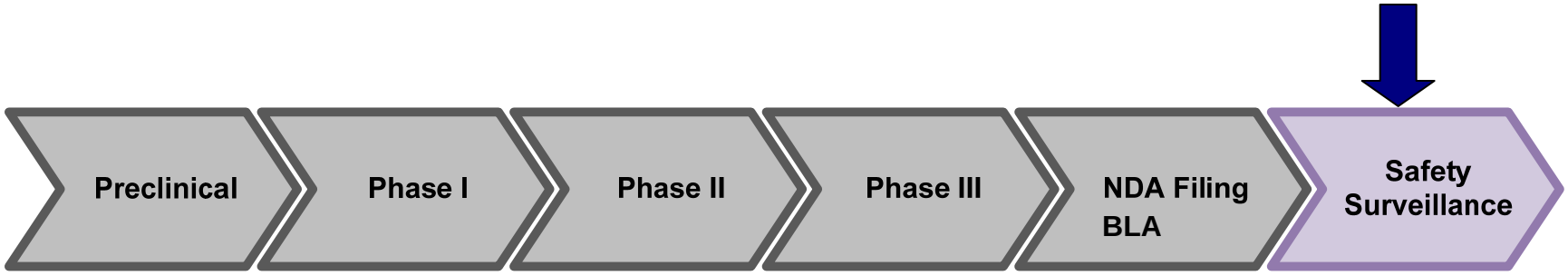
NDA/BLA Submission

- **Includes all animal and human data from the development program**
- **FDA determines the application's completeness and assigns a review team to evaluate the application**
- **FDA assesses –**
  - Whether effectiveness has been demonstrated for the drug's proposed use
  - Whether the safety assessment is adequate to conclude that the drug is safe – i.e., the benefits of the drug outweigh its risks
  - Whether the manufacturing methods and the controls used to maintain the product quality are adequate
- **Advisory Committee input**



Post-Market Safety Surveillance

- **Knowledge about a product will always be limited at the time of approval**
  - Clinical studies are brief in duration and involve a limited patient population
  - New safety information often emerges after a product is used in a wider patient population
- **FDA maintains an active program in post-market safety surveillance to monitor adverse events**



Overview of Performance Goals

Submission	Goal
Original NDAs/BLAs and Efficacy Supplements	90% of priority applications within 6 months 90% of standard applications within 10 months
NDA/BLA Resubmissions	90% of Class 1 resubmissions within 2 months 90% of Class 2 resubmissions within 6 months
Manufacturing Supplements	90% of prior approval supplements within 4 months 90% of non-prior approval supplements within 6 months
Special Protocol Assessment (SPA) Review	90% of SPAs within 45 days of receipt
Clinical Hold Response	90% of clinical hold responses within 30 days of receipt
Meeting Scheduling	90% of Type A/B/C meetings within 30/60/75 days of receiving request

PDUFA performance deadlines and regulatory oversight responsibilities address a large volume of incoming work

Unit	Sample period: 7/1/2008- 6/30/2009
Investigational New Drugs (INDs) with activity	**5,728**
IND/New Drug Application (NDA) Meeting Requests	**1,977**
Original NDA/Biologic License Application (BLAs)	**138**
Efficacy Supplements	**135**
Manufacturing Supplements	**1,887**
NDA/BLA Labeling Supplements	**1,167**
IND Special Protocol Assessments	**342**
NDA/BLA Annual Reports	**2,669**

Next – Drug Review in PDUFA IV