CERTARA

Integrated Drug Development (iDD)

Changing the Game, Optimizing Success, Increasing Value

Committed to scientific and regulatory advancement, Certara has integrated its capabilities to create impactful healthcare solutions.

Certara has demonstrated that a modern, state-of-the-art integrated drug development approach, using quantitative methods to inform, guide, and supplant traditional development methods, will dramatically improve efficiency and reduce costs.

To achieve these objectives, Certara employs a strategic and programmatic approach that leverages its expertise in drug development, clinical pharmacology, model-informed drug development (MIDD), health economics/outcomes research (HEOR), real world evidence (RWE) services and regulatory science to optimize end-to-end decision-making. As an outsourced part of your R&D team, we support specific products, programs, or entire portfolios, advise on licensing and due diligence activities, work alongside a drug development team, or serve as a fully outsourced partner for products intended for regulatory approval or those going for proof-of-concept.

As game changers and innovative thinkers, we are dedicated to helping our clients develop new therapies and target new unmet medical needs, to expand the benefits of existing therapies to other populations, to communicate scientific information in the language of regulatory success, to balance risk profiles, to differentiate drugs from a competitive landscape, to prepare for market access, and to unlock millions of dollars in R&D savings. We succeed by creating value for our customer partners.

Our Proven Approach

The Certara iDD™ team provides drug stewardship, regulatory strategy, and multi-disciplinary competencies to strengthen each development program. We work as an integrated part of your team, asking and answering questions, leveraging the most innovative modeling and simulation technologies, and providing deep scientific and regulatory acumen to impact the ROI of your R&D investment.

Aligned with Regulators

"To promote the most promising opportunities and address the corresponding intricacy of these new endeavors, the FDA has introduced many fundamental advances in how it evaluates drugs for safety and effectiveness, as well as the manner in which clinical trials are guided...

So do the introduction of new scientific domains into the development and review process. This includes the more widespread use of modeling and simulation, the greater use of real-world evidence in the pre- and post-market setting, and the adoption of better tools for collecting and evaluating more real-time safety information after products are approved."

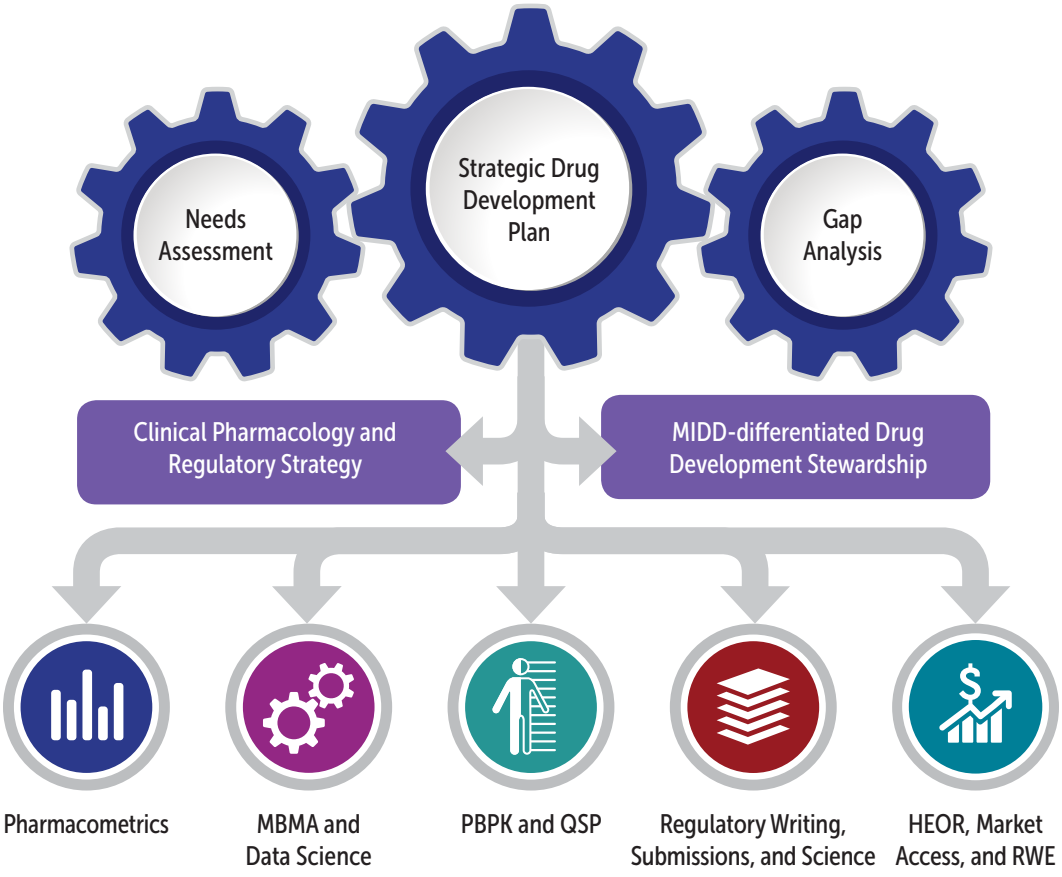
– Statement from **FDA Commissioner Scott Gottlieb, MD** on proposed modernization of FDA's drug review office, June 2018

Thinking Without Borders™

By leveraging its world-leading modeling and simulation expertise with proven drug development, clinical pharmacology, and regulatory science experience, Certara is uniquely qualified to advise and optimize on the myriad of crucial decisions that determine success in today's drug development programs. As a partner and member of your team, we will develop a robust plan for each compound that is pressure-tested and executable, differentiated by MIDD, focused on regulatory and commercial acceptance and optimal use of medicines, and delivered with certainty, efficiency, and cost-effectiveness.

Certara has helped sponsors bring more than 100 drugs to market over the past several years and advised on hundreds of programs from early clinical development stages through proof-of-concept. Those drug programs, for companies both large pharma and emerging biotech, cover a range of therapeutic areas, including oncology, immunology, rare disease, CNS, metabolic, and infectious disease. They address the needs of special populations, such as pediatrics, geriatrics, co-morbidities, and global health challenges. They have been developed in accordance with the leading global regulatory agencies, such as FDA, EMA, MHRA, and PMDA. And they have been executed under unique regulatory programs such as breakthrough drugs, orphan designation, and priority review.

Engagement Strategy Tailored to Achieve Project Goals



Certara's iDD approach enables sponsors to benefit from our broad end-to-end competencies, technological advances, and global experience. We help to navigate the increasingly complex landscape of drug development to maximize probability of success by increasing confidence in proof-of-concept, confidence in the understanding the compound and target, and addressing the regulatory and commercial decision-making process for a new product.

The Certara iDD Approach

- Our work typically begins with an analysis and pressure-testing of the drug development, regulatory and clinical pharmacology strategy
- The strategic plan will be harmonized with the overall clinical development plan and takes into consideration strategies to support accelerated or breakthrough regulatory pathways; Certara can identify key gaps and program risks or jump directly into specific areas of need
- Oftentimes, we begin with a gap analysis and development or refinement of the strategic roadmap; to that end, we have created a review tool that considers the 40 different questions that the agency will ask about your clinical pharmacology data package at the time of a New Drug Application (NDA) submission; most important, this work will ready you for critical milestones such as End of Phase 1 (EOP1), EOP2 or Pre-NDA meetings
- In addition to identifying gaps and hot spots, the strategy is created to ensure each of the relevant domains are optimized, that gaps are properly addressed, and that data is gathered at meaningful times to enhance decision-making and reduce cost and timeline
- Our deliverables are fit-for-purpose and meet strategic objectives, are aligned with regulatory authority requirements and expectations, and are updated and adjusted based on program evolution
- As a member of your development team, we leverage the wide range of Certara's MIDD capabilities to answer key technical, regulatory and commercial challenges:
  - Optimize cost and time of development
  - Provide a decision support system that consistently delivers reliable, reproducible and predictable decisions, now expected by regulators and payers
  - Inform and optimize label claims
  - Understand all dimensions and levers of efficacy and safety translation
  - Maximize commercial success via the interplay of model-based meta-analysis (MBMA), PK/PD analysis, and health economics and outcomes research modeling
- Our regulatory scientists are uniquely versed in the language of quantitative science, and create regulatory dossier, clinical, non-clinical, CMC, and safety plan documents, regulatory agency communications, and all required submission documents;
- We routinely work to guide and/or participate in key regulatory meetings.

The ROI of the Certara iDD approach aligns with advancing development timelines, reducing investment, increasing probability of success, and creating bankable plans for raising capital. The ROI, which can range from 10–20x to 50–100x, depending on the program, aligns to reduced clinical trial size, expedited time-to-market, and *in vitro* studies that can be replaced by MIDD. For example, our work using the Simcyp Simulator has resulted in more than 150 label claims using PBPK in lieu of clinical studies.

Key decisions analyzed and informed by Certara's work include:

Making informed and quantitative **go/no go portfolio** decisions

Pressure testing and **optimizing** drug development strategies

Selecting **first-in-human**, final dose, and dosing regimen

Comparing drug candidates for **safety**, **efficacy**, and **commercial viability**

Developing safer, targeted, and **more efficient trial designs**

Informing on **comparative effectiveness** and commercial potential

Determining optimal and alternative **drug formulations**

Identifying **drug-drug interactions** and other safety concerns

Optimizing **product labeling**

Analyzing real world outcomes for **drug value assessment**

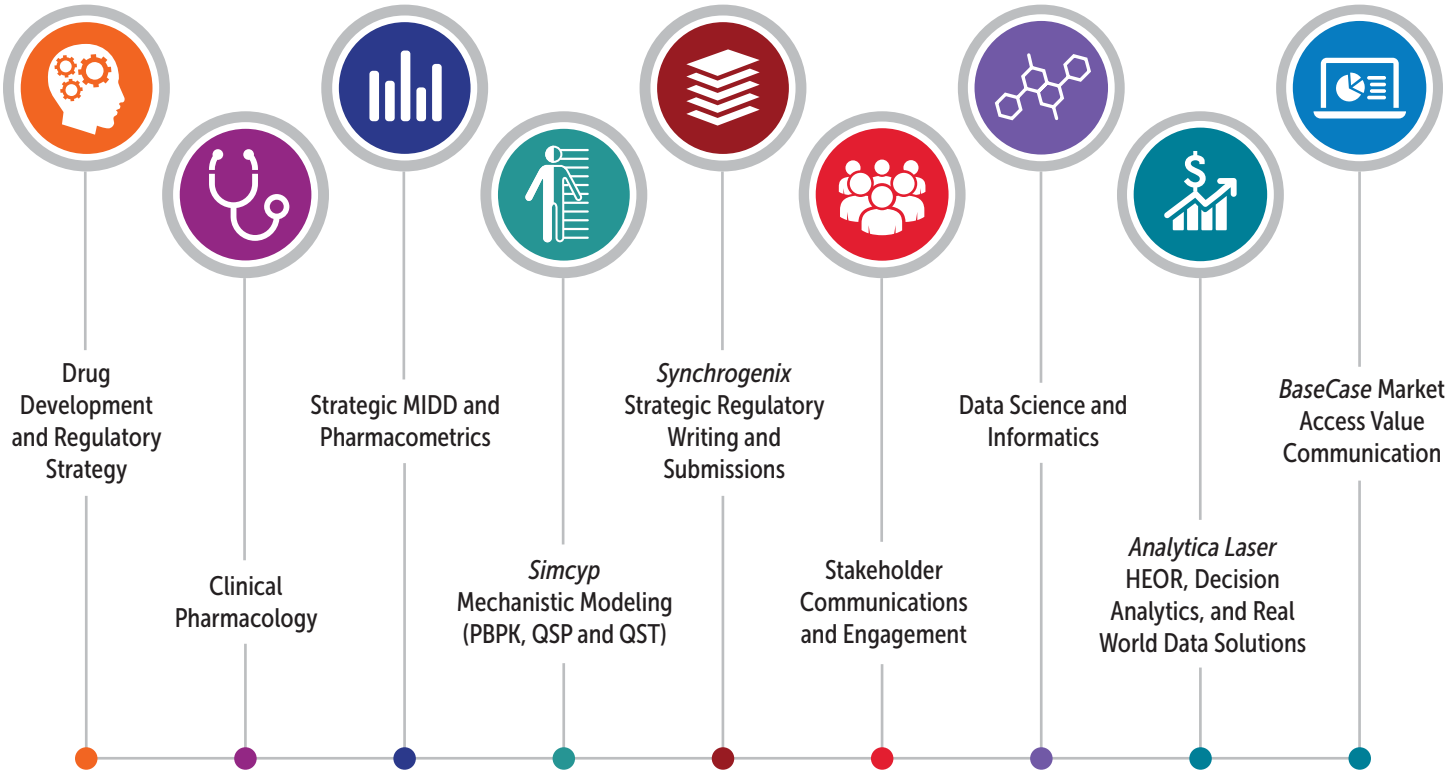
Determining and implementing the **optimal regulatory and health technology assessment filing strategy**

Demonstrating **improved benefit/risk** compared to standard of care

Performing **due diligence** on compounds for in- or out-licensing

Maximizing **valuation** for compounds and companies

Certara's End-to-End Translational Capabilities



With more than 750 scientists, technologists, and regulatory and market access specialists, the Certara staff has broad experience available to support any drug program. In fact, 90% of all novel drugs approved by the US FDA in the past three years were supported by Certara software or services. The Certara iDD team routinely works across all therapeutic areas and innovative therapies, including immuno-oncology, rare disease, CNS, respiratory disease, gene therapy, and global health, and provides translational solutions from discovery to patient access.

About Certara

Certara is a leading provider of decision support technology and consulting services for optimizing drug development and improving health outcomes. Certara's solutions, which span the drug development and patient care lifecycle, help increase the probability of regulatory and commercial success by using the most scientifically advanced modeling and simulation technologies and regulatory strategies. Its clients include hundreds of global biopharmaceutical companies, leading academic institutions and key regulatory agencies.

For more information visit www.certara.com or email sales@certara.com.

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