U.S. FOOD & DRUG ADMINISTRATION

Center for Drug Evaluation and Research

Office of Pharmaceutical Quality
2023 Annual Report

OPQ Annual Report

The Office of Pharmaceutical Quality (OPQ) within FDA's Center for Drug Evaluation and Research (CDER) is responsible for assuring that quality medicines are available to the American public. Pharmaceutical quality assures the availability, safety, and efficacy of every dose of medicine. OPQ oversees domestic and foreign manufacturing and every type of marketed human drug product including new and generic drugs, biologics including biosimilars, and over-the-counter products. Assessment, inspection, surveillance, research, and policy work in harmony to provide regulatory oversight across the globe and across the lifecycle of drug products.

OPQ's assessment of drug marketing and licensing applications is enabled by a team of experts in drug substance, finished drug product, manufacturing, and biopharmaceutics to provide the quality recommendation for an application's approval. Facility inspections, and alternative tools for facility evaluation, are essential for assuring manufacturing quality and compliance with manufacturing requirements. OPQ serves as the lead for pre-license inspections of facilities manufacturing biotechnology products and participates as subject matter experts on preapproval inspections for other product types when needed.

OPQ uses surveillance to continuously monitor the state of quality of CDER-regulated sites and products and to act quickly to protect consumers from quality risks. Research generates knowledge that enables sound science-based decisions and policies related to pharmaceutical quality. Clear and robust policies developed in OPQ provide direction and clarity to pharmaceutical stakeholders.

The strategic pillars of collaboration, communication, engagement, and innovation support OPQ's core functions. Collaboration strengthens OPQ's culture and relationships with FDA business partners. Communication allows OPQ to elevate awareness and commitment to the importance of pharmaceutical quality. Innovation works to promote the availability of better medicines for the American public, while engagement forges partnerships and connections with public stakeholders.


Assessment
Inspection
Surveillance
Research
Policy
OPQ
Across the Lifecycle
Development
Pre-market
Post-market
Over-the-Counter Drugs
Biologics & Biosimilar Drugs
New & Generic Drugs
Domestic and International Manufacturers

Strategic Priorities

OPQ uses four strategic priorities to assure that quality drugs are available to the American public.This report shares accomplishments related to each of these priorities in (calendar year) 2023.

Collaboration

Strengthens OPQ's culture and relationships with FDA business partners

- CDER's Drug Product Catalog contains >**140,000** drug products
- CDER's Site Catalog contains >**4,800** manufacturing sites
- Quality assessments of >**1,100** approved applications
  - **118** new drug applications
  - **956** generic drug applications
  - **29** biologics license applications (including biosimilars)
- Supported **55** novel drug approvals including **17** biotechnology products
- **359** expedited quality assessments to address drug shortages
- **28** priority assessments to address orphan diseases
- **65** pre-license inspections in **10** states and **18** countries

Communication

Elevate awareness and commitment to the importance of pharmaceutical quality

- Supported release of **10** guidance documents
- Published **7** Manuals of Policy and Procedures (MAPPs) and **2** compliance programs
- Released Report on the State of Pharmaceutical Quality in June 2023 which has been downloaded >**7,800** times
- OPQ staff participated in public workshops, conferences, and webinars >**350** times
- Published >**90** articles in peer-reviewed literature

Engagement

Forge partnerships and connections to stakeholders

- Developed **12** CDER workshops and events
- The biennial Pharmaceutical Quality Symposium drew nearly **7,000** virtual attendees from **122** countries
- Developed **7** international guidelines on quality topics
- Evaluated **2** submissions alongside other global regulators in international pilot programs
- Participated in **119** U.S. Pharmacopeia expert bodies
- Published **2** papers on Quality Management Maturity

Innovation

Promoting the availability of better medicines

- Accepted **15** proposals to the Emerging Technology Program
- Hosted a two-day public workshop and published a white paper on AI in drug manufacturing
- Published a paper summarizing stakeholder feedback on the regulatory framework for distributed manufacturing
- Hosted a 2023 public workshop that supported the December 2023 release of a draft guidance document on the Advanced Manufacturing Technologies Designation Program
- Knowledge-aided Assessment and Structured Application (KASA) streamlined the assessment of nearly **1,440** applications

Collaboration

CDER's Site Catalog contains more than 4,800 manufacturing sites around the world. Although OPQ is responsible for assuring that human drug products marketed in the U.S. meet quality standards, it is not possible to do so working alone. This mission is enabled through collaborations within FDA, including the Office of Generic Drugs, the Office of New Drugs, the Office of Compliance, and the Office of Regulatory Affairs.

In 2023, OPQ performed the quality assessment of more than 1,100 product applications that were approved, or tentatively approved. This includes 118 new drug applications, 956 generic drug applications, and 29 biologics license applications (including biosimilars). Notably, OPQ supported 55 novel drug approvals (products with new molecules not previously submitted to FDA), a number that includes 17 novel biotechnology products. Innovative drugs often bring new or advanced treatment options for patients and consumers. These novel drugs were approved for treating a variety of conditions, including a rare genetic neurological disorder that affects brain development and anemia caused by chronic kidney disease.

All patients deserve confidence in their next dose of medicine. While all applications submitted under User Fee programs are assessed using target timelines, OPQ expedites assessments to address critical public health needs, for example, to address drug shortages and rare or orphan diseases. OPQ performed 359 expedited quality assessments to address drug shortages and 28 priority assessments to address orphan diseases for which there are few, if any, treatment options.

OPQ inspects facilities around the world that propose to manufacture biotechnology products for U.S. patients. In 2023, OPQ conducted 65 pre-license inspections of facilities manufacturing biotechnology products in 10 states and 18 countries. All facilities manufacturing human drugs to be marketed in the U.S. must meet the same requirements regardless of their location and product.

Communication

The exchange of information between FDA and the public enables OPQ's core functions. OPQ's diverse communications span formal written communications (such as policy documents and official reports) to oral presentations from OPQ staff experts delivered at scientific events around the world.

In 2023, OPQ supported the release of 10 guidance documents for industry on topics including cannabis in clinical research, an advanced manufacturing technology designation program, and alternative tools to assess manufacturing facilities. These guidance documents help describe FDA's interpretation of policy on regulatory issues, and when final, represent the current thinking on a topic. Other policy documents, such as Manuals of Policy and Procedures (MAPPs) and compliance programs, document internal FDA policies and procedures, though most are available to the public to promote transparency. In 2023, OPQ published seven MAPPs on topics including revisions to CDER's Risk-Based Site Selection Model, which CDER uses to prioritize manufacturing sites for surveillance inspections. OPQ supported publishing two compliance programs, which provide instructions to FDA personnel participating in inspections.

Each year, OPQ releases a report on the state of pharmaceutical quality, which provides objective measures and analysis of the U.S. pharmaceutical landscape, such as the location of manufacturers and the product quality defect reports received. The latest Report on the State of Pharmaceutical Quality released in June 2023 has been downloaded more than 7,800 times.

OPQ staff experts regularly give presentations at public events. In 2023, OPQ staff participated in public workshops, conferences, and webinars more than 350 times. OPQ produced a video describing the roles of FDA and industry in protecting consumers from drug quality risks. OPQ scientists and researchers published more than 90 articles in peer-reviewed literature on topics ranging from analytical methods to evaluate drug critical quality attributes, to the binding of bispecific antibodies to targets, to the use of advancing manufacturing technologies. In 2023, OPQ researchers earned the 2023 High Impact Publication Award from the American Association of Pharmaceutical Scientists (AAPS) for their article on cancer immunotherapy, marking the first time OPQ researchers have earned this prestigious external award.

Engagement

Engagement encourages active partnerships among OPQ, other organizations, and the public. In 2023, OPQ continued a lasting collaboration with CDER's Small Business and Industry Assistance (SBIA) program to develop 12 workshops and events, free and open to the public. This included the biennial Pharmaceutical Quality Symposium, which drew nearly 7,000 virtual attendees from 122 countries. Expert panelists from FDA answered audience questions during the event and all recordings are available online.

OPQ also engages international regulators to work toward the convergence of global regulatory practice. In 2023, OPQ helped to develop seven International Council on Harmonisation (ICH) guidelines on quality topics including analytical procedure development and viral safety evaluation of biotechnology products. OPQ also engaged with the international regulatory community through the International Coalition of Medicines Regulatory Authorities (ICMRA) pilot programs focused on hybrid inspections and the collaborative assessment of post-approval changes. The goals of these programs are to develop a common international framework for collaborative assessment and hybrid inspection, identify best practices and standards, and align thinking in the international regulatory community. In 2023, OPQ evaluated two submissions alongside other global regulators in ICMRA pilot programs.

Drug quality standards allow FDA to set a level playing field for all applicants. OPQ works with the U.S. Pharmacopeia (USP) to develop quality standards for drug substances and products. In 2023, OPQ participated in 119 USP expert bodies as government liaisons on topics including excipients, packaging, and content uniformity. While some standards are mandatory, many non-mandatory standards proposed by stakeholders and recognized by FDA are known as voluntary consensus standards. When used appropriately, such standards can reduce the amount of documentation needed in a regulatory submission. In 2023, CDER stood up a Quality Standards Program to recognize voluntary consensus standards related to pharmaceutical quality and create efficiencies in generic and biosimilar manufacturing as part of the Drug Competition Action Plan and Biosimilars Action Plan.

Engagements also help shape the future of pharmaceutical quality, as exemplified by OPQ's Quality Management Maturity (QMM) Program, which aims to encourage drug manufacturers to implement quality management practices that go beyond current good manufacturing practice (CGMP) requirements. Adopting mature quality management practices supports a more reliable drug supply chain by reducing the occurrence of quality-related failures and improving the ability of manufacturers to maintain performance during supply chain disruptions. In 2023,

OPQ published a peer-reviewed article describing the lessons learned from pilot programs on assessing the QMM of drug manufacturing establishments. Additional stakeholder engagements informed an August 2023 white paper on QMM assessment protocol development and a public docket that solicited comments to assist in further developing a QMM program.

Innovation

Advanced manufacturing technologies, such as continuous manufacturing and artificial intelligence (AI), have the potential to contribute to a more agile and responsive pharmaceutical manufacturing landscape. While these technologies might help to promote supply chain resilience, they can bring uncertainty for stakeholders. CDER's Emerging Technology Program (ETP) enables early FDA engagement with stakeholders developing emerging pharmaceutical technologies prior to a regulatory submission. In 2023, the ETP accepted 15 proposals and held meetings with stakeholders developing emerging technologies such as continuous manufacturing, distributed manufacturing, and novel unit operations. The ETP has now supported 22 FDA staff visits to manufacturing sites developing emerging technologies and CDER has approved 21 total applications for products using emerging technologies through the end of 2023.

CDER's Framework for Regulatory Advanced Manufacturing Evaluation (FRAME) Initiative complements the ETP by helping CDER prepare for applications employing advanced manufacturing technologies such as AI and distributed manufacturing. The FRAME initiative aims to prepare a regulatory framework to support the adoption of advanced manufacturing technologies. In 2023, FDA hosted a two-day public workshop on the regulatory framework for AI and published a white paper requesting stakeholder comments on the use of AI in drug manufacturing. FDA also published a paper summarizing stakeholder feedback on the regulatory framework for distributed manufacturing and shared CDER's actions to address this framework. Other stakeholder engagements included a June 2023 public workshop that supported the December 2023 release of a draft guidance document on the Advanced Manufacturing Technologies Designation Program to facilitate the development of drugs manufactured with advanced technologies.

Internal innovations are also improving the quality assessments performed by OPQ. The Knowledge-aided Assessment and Structured Application (KASA) captures and manages knowledge over a drug's lifecycle and provides a framework for a structured quality assessment. KASA was used to promote consistency across assessors and streamline the assessment of nearly 1,440 applications in 2023.

Moving Toward the Future

In late 2023, OPQ announced a reorganization that was implemented in mid-January 2024. This reorganization allows OPQ to adapt to the changing pharmaceutical landscape by being more agile and efficient. Key changes in this reorganization include:

- Consolidating research functions into a single Office of Pharmaceutical Quality Research to improve research coordination and allow OPQ to manage lab-based resources efficiently.
- Creating a new Office of Quality Assurance to foster continuous improvement, staff development, and quality in OPQ work products.
- Placing existing assessment functions in the new Offices of Product Quality Assessment I, II, and III to encourage a lifecycle focus and agility in responding to an evolving workload.

This reorganization is the result of strategic planning to streamline OPQ's structure to accommodate a changing drug marketplace and evolving priorities in pharmaceutical quality. External stakeholders should not feel any immediate impact of OPQ's reorganization. Many of the benefits of OPQ's new organizational structure are internal, such as better balancing staff workload and expanding staff expertise and capability. Such improvements are needed to continue OPQ's performance in a future in which quality drugs are always available when the American public needs them.

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U.S. Food and Drug Administration
10903 New Hampshire Avenue
Silver Spring, Maryland 20993