Lifecycle Management of Drug Products: FDA’s Perspective

Susan Rosencrance, Ph.D.
Director (Acting), Office of Lifecycle Drug Products
Office of Pharmaceutical Quality/CDER/FDA

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Overview

I. Lifecycle Management of Pharmaceuticals – General Concepts

II. Lifecycle Management for Industry

III. Lifecycle Management for the FDA

IV. How OPQ Promotes Lifecycle Management

V. New Paradigm Advantages
I. Lifecycle Management of Pharmaceuticals

- A process for managing a drug product from its inception and development, through design and manufacture, to commercialization and disposal

- Lifecycle management integrates people, data, processes and business systems; and provides a product information backbone
I. Lifecycle Management of Pharmaceuticals

Managing product information and tapping into the knowledge base so that quick, informed decisions can be made during all stages of a product’s lifecycle.

- Industry
- FDA
II. Lifecycle Management for Industry

• Building a knowledge base that allows industry to leverage available data to improve product and process design, and optimize the manufacturing process

• Quality by Design (QbD), which is based on product and process understanding and knowledge, offers a holistic approach to lifecycle management
II. Lifecycle Management for Industry

QbD = Product Understanding + Process Understanding

Product Understanding:
- Product Design
- Product Quality Attributes
- Desired Product Performance
- Product Specifications

Process Understanding:
- Process Design
- Process Parameters
- Process Performance
- Process Controls

The Knowledge Base
II. Lifecycle Management for Industry

The ‘Knowledge Base’ represents a useful repository that allows industry to:

- More clearly identify risks
- Consistently meet high quality standards
- Quickly address emerging problems
- Improve efficiency
- Reduce the need for regulatory oversight
III. Lifecycle Management for the FDA

The formation of the Office of Pharmaceutical Quality (OPQ) offers new opportunities in CDER for building and using an integrated ‘Knowledge Base’
III. Lifecycle Management for the FDA

The Knowledge Base

- OPQ uniquely positions CDER with a single unit dedicated to product quality that:
  - Covers all drug product areas (new drugs, generic drugs, OTC drugs) and spans pre- and post-approval
  - Integrates review, inspection, and research functional areas
  - Matrices the review function across OPQ for enhanced interactions, communication, and consistency among sub-offices
III. Lifecycle Management for the FDA

The integrated ‘Knowledge Base’ built in OPQ will allow for:

– Greater parity in the regulatory oversight and quality assessment of brand and generic drugs

– Clearer identification of product risks

– The application of uniform quality standards for both brand and generics drugs
III. Lifecycle Management for the FDA

- Quickly addressing quality problems
- Overall efficiency improvements
- Reduced regulatory oversight
IV. How OPQ Promotes Lifecycle Management
Office Of Pharmaceutical Quality

Immediate Office
Acting Director: Janet Woodcock
Deputy Director: Lawrence Yu

Office of Program and Regulatory Operations
Acting Director: Giuseppe Randazzo

Office of Policy for Pharmaceutical Quality
Acting Director: Ashley Boam

Office of New Drug Products
Acting Director: Sarah Pope Miksinski

Office of Lifecycle Drug Products
Acting Director: Susan Rosencrance

Office of Surveillance
Acting Director: Russell Wesdyk

Office of Process and Facilities
Acting Director: Christine Moore

Office of Testing and Research
Director: Lucinda Buhse

Office of Biotech Products
Director: Steven Kozlowski
Office of New Drug Products (ONDP)  
Office of Lifecycle Drug Products (OLDP)

- **Pre-Marketing**: Both offices responsible for evaluating and assessing product quality aspects of NDAs (ONDP) and ANDAs (OLDP)

- **Post-Marketing**: ONDP responsible for monitoring post-approval activities of NDAs for a limited duration (1 or 3 years)

- **Post-Marketing**: OLDP responsible for lifecycle monitoring of NDAs (after the hand-off) and ANDAs
Both offices will work with subject matter experts across OPQ to:

- Perform team-based reviews and provide risk-informed recommendations on approvability to stakeholders

- Perform collaborative evaluation and assessments, as needed, of supplements and annual reports

- Participate, as needed, in scientific investigations to evaluate and access any quality problems that arise during a product’s lifecycle
Drug Product Lifecycle Phases (Brand and Generic)

- **Phase 1** - IND → NDA → sNDA
  - Knowledge base of quality issues and potential risks established

- **Phase 2** - sNDA
  - Knowledge base accumulated during NDA post-marketing and lifecycle monitoring phase

- **Phase 3** – ANDA
  - NDA knowledge base guides ANDA pre-marketing quality assessment

- **Phase 4** – sANDA
  - Knowledge base accumulates during ANDA post-marketing and lifecycle monitoring phase

Transition Period: 1 or 3 years
Knowledge Management Across OPQ (Brand and Generic)

Based on slide by Arwa ElHagrasy and Maria Manzoni
Hand-off of NDAs from ONDP → OLDP

• Based on risk, NDAs that are New Molecular Entities (NMEs) will reside in ONDP for 3 years following approval
  – Allows critical Adverse Event Reports and associated post-marketing submissions to be handled by the pre-established OND/ONDP interface
  – For critical NME supplements submitted post-Year 3, ONDP reviewers can be included on any review teams assembled for maximized knowledge sharing
Hand-off of NDAs from ONDP → OLDP

• Based on science and the need to maximize knowledge sharing, non-NMEs will reside in ONDP for 1 year following approval
  
  – The hand-off allows OLDP to gain knowledge and better prepare for the first 505j (generic) received for that particular drug product
  
  – For critical supplements submitted post-Year 1, ONDP reviewers can be included on any review teams assembled for maximized knowledge
V. New Paradigm Advantages

• Benefits of OPQ
  
  – Enhances communication and knowledge management by leveraging subject matter expertise across the organization.
  
  – Brings parity to the regulatory oversight of brand and generic drugs leading to enhanced lifecycle management.
V. New Paradigm Advantages

• Benefits of OPQ
  – Helps build an integrated knowledge base that allows CDER to:
    • Clearly identify product risks
    • Quickly address quality problems
    • Improve overall efficiency and effectiveness
V. New Paradigm Advantages

• Leveraging the ‘Knowledge Base’: 
  – Leads to better management of post-approval changes by both industry and regulators 
  – Results in greater transparency, understanding, and trust between regulators and industry promoting enhanced regulatory flexibility
V. New Paradigm Advantages

• Well managed information from all stages of a product’s lifecycle results in an environment where everyone wins!
In Conclusion…..

Patients

Regulators

Industry

Good lifecycle management results in a continuous supply of quality drug products

We all Benefit
…..working together is success
~Henry Ford