Drug-Device Combination Products:
Updates and Challenges with Demonstrating Generic Substitutability

Public Workshop

March 14-15, 2024

Agenda

March 14, 2024 (Day 1)

8:30 AM – 8:40 AM	**Welcome and Opening Remarks**	
	Anna Schwendeman, PhD	Co-Director, CRCG
8:40 AM – 8:50 AM	**Opening Remarks**	
	Markham Luke, MD, PhD	Director, DTP I, ORS, OGD, FDA
8:50 AM – 9:00 AM	**Summary of 2023 DDCP 101 course and Day 1 Overview**	
	Katharine B. Feibus, MD	Team Leader, Device Evaluation Team, DTP I, ORS, OGD, FDA
	Brandon Wood, BS	Director of Regulatory Affairs, Generic Steriles, Teva Pharmaceuticals USA, Inc.

Plenary Talk

9:00 AM – 9:35 AM	***Barriers to Entry for Generic Drug-Device Combinations in the US***	
	William Feldman, MD, DPhil, MPH	Associate Physician**,** Brigham and Women's Hospital, Instructor of Medicine, Harvard Medical School

Symposium I: Understanding the Landscape and Challenges for Development of Generic Drug-Device Combination Products

This symposium will set the stage for the day's exploration of challenges with generic drug-device combination product (DDCP) development. FDA presenters will provide a generic drug policy update. Industry representatives will explore current challenges during generic DDCP development and across the product lifecycle, including approaches to developing a generic DDCP for a discontinued RLD. Patients who use DDCPs to manage their health conditions will share their experiences with generic DDCP substitution.

9:35 AM – 9:40 AM	***Introduction to Session and Speakers***	
	Karthika Natarajan, PhD	Staff Fellow, DTP I, ORS, OGD, FDA
9:40 AM – 10:00 AM	***Current Regulation, Policy, Guidance on Generic DDCPs***	
	Lisa Bercu, JD	Senior Regulatory Counsel, DPD, OGDP, OGD, FDA
10:00 AM – 10:25 AM	***Generic DDCP Development: Challenges and Opportunities for Substitutability***	
	Johannes Keuschnigg, PhD	Regulatory Devices Portfolio Head, Sandoz
10:25 AM – 10:45 AM	***Coffee Break***	
10:45 AM – 11:10 AM	***An Industry Perspective on Challenges Experienced Using Comparison to Demonstrate Safe and Effective Use***	
	Tim Briggs, MSc	Senior Principal Human Factors Engineer**,** Global Device Development**,** Viatris
11:10 AM – 11:35 AM	***Patient Perspectives on Generic Substitution of Complex Drug-Device Combination Products***	
	Patient Speakers	
	Facilitator: Sarah Ibrahim, PhD	Associate Director for Stakeholder and Global Engagement, OGD, FDA
11:35 AM – 12:05 PM	***Panel Discussion***	
Moderator:	**Karthika Natarajan, PhD**	Staff Fellow, , Device Evaluation Team (Team D), DTP I, ORS, OGD, FDA
Panelists:	**Lisa Bercu, JD**	Senior Regulatory Counsel, DPD, OGDP, OGD, FDA
	Tim Briggs, MSc	Senior Principal Human Factors Engineer**,** Global Device Development**,** Viatris
	CDR. Andrew Fine, PharmD, BCPS	Senior Advisor, DCR, OSCE, OGD, FDA
	Johannes Keuschnigg, PhD	Regulatory Devices Portfolio Head, Sandoz
	Markham Luke, MD, PhD	Director, DTP I, ORS, OGD, FDA
12:05 PM – 1:05 PM	***Lunch Break***	

Symposium II: Assessment of "Other Design Differences" for Generic DDCPs: Current Challenges and Future Opportunities

This symposium will explore Industry and Academia perspectives on risk management, user errors, and alternative methods to support user interface differences. FDA staff will share their perspectives on comparative UI assessment and types of information applicants can use to justify "other design differences."

1:05 PM – 1:10 PM	***Introduction to Session and Speakers***	
	Shinae Kim, PhD	Consultant V, DTP I, ORS, OGD, FDA
1:10 PM – 1:40 PM	***An FDA Perspective on Best Practices for Comparative Analyses: Challenges & Opportunities***	
	Katharine B. Feibus, MD	Team Leader, Device Evaluation Team, DTP I, ORS, OGD, FDA
	CDR Andrew Fine, Pharm D, BCPS	Senior Advisor, DCR, OSCE, OGD, FDA
	Jason Flint, MBA, PMP	Deputy Director, DMEPA I, OMEPRM, OSE, FDA
1:40 PM – 2:00 PM	***Risk Management and Evaluation of Use Errors to Prevent Compromised Medical Care with Generic DDCPs***	
	Carrie O'Donel, BA, MS	Principal Device Engineer, CPD R&D, Teva Pharmaceuticals
2:00 PM – 2:20 PM	***Determining "Other Design Differences" and Ways to Support Generic Substitutability***	
	Megan Conrad, PhD	Associate Professor, Mechanical Engineering, University of Detroit Mercy
	Mary Beth Privitera, MDes, PhD	Professor, Biomedical Engineering, Co-Founder, Medical Device Innovation & Entrepreneurship Program, University of Cincinnati
2:20 PM – 2:50 PM	***Panel Discussion***	
Moderator:	**Shinae Kim, PhD**	Consultant V, DTP I, ORS, OGD, FDA
Panelists:	**David Ahern**	Head of Device Development Center, Sandoz
	Megan Conrad, PhD	Associate Professor, Mechanical Engineering, University of Detroit Mercy
	Katharine B. Feibus, MD	Team Leader, Device Evaluation Team, DTP I, ORS, OGD, FDA
	CDR Andrew Fine, PharmD, BCPS	Senior Advisor, DCR, OSCE, OGD, FDA
	Jason Flint, MBA, PMP	Deputy Director, DMEPA I, OMEPRM, OSE, FDA
	Carrie O'Donnel, BA, MS	Principal Device Engineer, CPD R&D, Teva Pharmaceuticals
	Mary Beth Privitera, MDes, PhD	Professor, Biomedical Engineering, Co-Founder, Medical Device Innovation & Entrepreneurship Program, University of Cincinnati

User Inter-FACE TIME with FDA: Q&A

2:50 PM – 3:25 PM

Facilitator:	**Robert Lionberger, PhD**	Director, ORS, OGD, FDA
Panelists:	**Howard Chazin, MD, MBA**	Director, DCSS, OSCE, OGD, FDA
	William Chong, MD	Director, OSCE, OGD, FDA
	Jason Flint, MBA, PMP	Deputy Director, DMEPA I, OMEPRM, OSE, FDA
	Stella Grosser, PhD	Director, DB VIII, OB, OTS, FDA
	Markham Luke, MD, PhD	Director, DTP I, ORS, OGD, FDA
3:25 PM – 3:30 PM	***Day 1 Closing Remarks (End of Day for Virtual Attendees)***	
	Robert Lionberger, PhD	Director, ORS, OGD, FDA
3:30 PM – 3:45 PM	***Coffee Break***	

Symposium III: Setting the Course for the Generic DDCP Future (in-person attendees only)

During this in-person only symposium, each in-person attendee will participate in two working session sub-groups and will help identify challenges, knowledge gaps, resource needs, and next steps. Topic co-facilitators will summarize outcomes on Day 2 of the workshop and document outcomes in a white paper for possible publication. Symposium outcomes will inform a "roadmap" for a CRCG working committee and ongoing work related to DDCP comparative user interface assessment. In-person attendees will choose from the following working session sub-groups:

3:45 PM – 3:55 PM	**Introduction to Working Session 1**	
	Katharine B. Feibus, MD	Team Leader, Device Evaluation Team, DTP I, ORS, OGD, FDA
3:55 PM – 5:10 PM	***Working Session 1 Sub-Groups***	

1) **Minor Design Differences vs. Other Design Difference – Learning to Speak the Same Language.**
   Do industry, human factors experts and FDA reviewers identify and classify user interface design differences in the same way? Could other tools inform more consistent and informative device user interface difference identification, classification, and risk assessment?
   Co-Facilitators:
   - **Betsy Ballard, MD** — Medical Officer on Team D, DTP I, ORS, OGD, FDA
   - **Lee Leichter, RAC, MBA** — President, P/L Biomedical

- **Mary Beth Privitera, MDes, PhD** — Professor, Biomedical Engineering, Co-Founder, Medical Device Innovation & Entrepreneurship Program, University of Cincinnati

2) **When Might "Other Design Differences" Be Justified Without a CUHF Study?**
What are the drug products, use context, or other factors that inform the types of data and information that can support an "other design difference?"

Co-Facilitators:

- **CAPT Irene Z. Chan, PharmD, BCPS** — Deputy Director, DMEPA I, OMEPRM, OSE, FDA
- **Michelle Lin, MD** — Senior Physician, DCR, OSCE, OGD, FDA
- **Claire McDiarmid, MS** — Sr. Director, User Interface, Risk Management, Global Device Dev, Viatris, Inc.
- **Heidi Mehrzad, MS** — CEO and Founder, HFUX R&D, Medical Device & Combination Product Development, HFUX Research, LLC

3) **Designing and Executing CUHF Studies – Choosing Study Population(s) and Statistical Methods**
What are the strengths and challenges of the statistical methods for CUHF studies recommended in FDA guidance? What are potentially viable alternatives, and is there a role for data modeling? What are the human factors principles that inform the types of subjects to include in your study.

Co-Facilitators:

- **Tim Briggs, MSc** — Senior Principal Human Factors Engineer**,** Global Device Development**,** Viatris
- **Somesh Chattopadhyay, PhD** — Lead Mathematical Statistician, DB VIII, OB, OTS, FDA
- **Jason Flint, MBA, PMP** — Deputy Director, DMEPA I, OMEPRM, OSE, FDA
- **Thomas Gwise, PhD** — Independent Statistical Consultant and Founder, T Gwise Consulting LLC

4) **Building a More Informed and Flexible Comparative User Interface Assessment Landscape**
What are the potential roles for limited data sharing, post-market real world evidence, decentralized study designs, artificial intelligence, and other novel approaches to further inform comparative user interface assessment between complex generic DDCPs and their RLDs?

Co-Facilitators:

- **Stella Grosser, PhD** — Director, DB VIII, OB, OTS, FDA
- **Satyashodhan Patil, BE, PGDIBO** — DGM (R&D)-Device Development, Sun Pharmaceutical Industries Ltd.
- **Markham Luke, MD, PhD** — Director, DTP I, ORS, OGD, FDA

Outcomes:

- The co-facilitators and notetakers for each sub-group topic will work together to develop a comprehensive written summary of the discussion and outcomes from their two working sessions. The workshop planning committee will compile these summaries into a white paper for possible publication.
- The white paper will serve as a resource for a CRCG working committee that will collaborate with FDA to develop a Generic DDCP Comparative User Interface Roadmap. The committee will suggest a prioritization of next steps and potential research questions to help address knowledge and resource gaps identified during this Symposium.
- There may be opportunities for interested workshop attendees to participate in the CRCG working committee or associated subcommittees established to work on specific challenges identified during this symposium.
- Information shared and ideas developed during this symposium may support CRCG development of a recommended work plan to address resource needs and scientific knowledge gaps.

5:10 PM – 5:15 PM ***Reminder about Day 2 Report Out and Evening Networking***

March 15, 2024 (Day 2)

Symposium III: Setting the Course for the Generic DDCP Future (Continued…) (in-person attendees only)

During this in-person only symposium, each in-person attendee will participate in two working session sub-groups and will help identify challenges, knowledge gaps, resource needs, and next steps. Topic co-facilitators will summarize outcomes on Day 2 of the workshop and document outcomes in a white paper for possible publication. Symposium outcomes will inform a "roadmap" for a CRCG working committee and ongoing work related to DDCP comparative user interface assessment. In-person attendees will choose from the previous working session sub-groups.

8:30 AM – 9:45 AM	**Working Session 2**	

Symposium IV: Device Manufacturing and Sustainability (start of day for remote attendees)

This symposium will discuss DDCP quality with a focus on device performance, manufacturing, and sustainability. Speakers from the FDA and industry will share their perspectives on best practices for device design, mitigating device failures, material selection, leachable risk assessment, supply chain challenges, device shortages, and product sustainability. The symposium will also cover navigating essential performance requirements and existing guidance.

9:45 AM – 9:50 AM	***Introduction to Session and Speakers***	
	Nathan A. Reed, PhD	Chemist, DPQR II, OPQR, OPQ, FDA
9:50 AM – 10:15 AM	***Supply Chain Challenges***	
	Marta Wosińska, PhD	Senior Fellow, Center on Health Policy, The Brookings Institution
10:15 AM – 10:35 AM	***Coffee Break***	
10:35 AM – 11:00 AM	***FDA Perspective on Device Shortages and Supply Chain Issues***	
	Michael Hoffmann, MS	OPEQ Device Shortages Lead, CSPS, OPEQ, CDRH, FDA
11:00 AM – 11:25 AM	***Incorporating Sustainable Thinking into Drug Delivery Device Development***	
	Fran Penrose, MEng	Mechanical Engineer, Cambridge Design Partnership
	Carol Stillman, BS, PMP	Senior Consultant Program Manager, Cambridge Design Partnership
11:25 AM – 11:50 AM	***ISO 11608-1 Development & Overview***	
	Kyran Gibson, BS	Biomedical Engineer and Lead Reviewer OHT III, DHT IIIC,, OPEQ, CDRH, FDA
	Rumi Young, MEng	Director, Regulatory Policy, Becton Dickinson (BD)
11:50 AM – 12:30 PM	***Panel Discussion***	
Moderator:	**Nathan A. Reed, PhD**	Chemist, DPQR II, OPQR, OPQ, FDA
Panelists:	**Kyran Gibson, BS**	Biomedical Engineer and Lead Reviewer OHT III, DHT IIIC,, OPEQ, CDRH, FDA
	Michael Hoffmann, MS	OPEQ Device Shortages Lead, CSPS, OPEQ, CDRH, FDA
	Fran Penrose, MEng	Mechanical Engineer, Cambridge Design Partnership
	Carol Stillman, BS, PMP	Senior Consultant Program Manager, Cambridge Design Partnership
	Marta Wosińska, PhD	Senior Fellow, Center on Health Policy, The Brookings Institution
	Rumi Young, MEng	Director, Regulatory Policy, Becton Dickinson (BD)
12:30 PM – 1:30 PM	***Lunch Break***	

Symposium V: Dosage Form Quality Challenges

This symposium will discuss specific dosage form challenges from a quality and engineering perspective. Speakers from the FDA and industry will discuss navigating differences in performance attributes between a proposed generic DDCP and its RLD, quality considerations for new DDCP ANDAs, and challenges in post-approval lifecycle management. Case studies will be presented on specific products to discuss successes and failures.

1:30 PM – 1:35 PM	***Introduction to Session and Speakers***	
	Nathan A. Reed, PhD	Chemist, DPQR II, OPQR, OPQ, FDA
1:35 PM – 2:00 PM	***Navigating Quality Challenges and Considerations in Drug-Device Combination Products***	
	Kai Kwok, PhD	Senior Pharmaceutical Quality Assessor, DPQA I, OPQA I, OPQ, FDA
2:00 PM – 2:50 PM	***Industry Perspectives on Quality Challenges and Successes***	
	Case Study 1: Injectable Device Development Success Driven by Patient Centric Approach	
	Satyashodhan Patil, BE, PGDIBO	DGM (R&D)-Device Development, Sun Pharmaceutical Industries Ltd.

	Case Study 2: Demonstrating Generic Substitutability when Considering Differences in User Interface: Beyond the Stats	
	Claire McDiarmid, MS	Sr. Director, User Interface, Risk Management, Global Device Dev, Viatris, Inc.
2:50 PM – 3:25 PM	***Panel Discussion***	
Moderator:	**Nathan A. Reed, PhD**	Chemist, DPQR II, OPQR, OPQ, FDA
Panelists:	**Claire McDiarmid, MS**	Sr. Director, User Interface, Risk Management, Global Device Dev, Viatris, Inc.
	Kai Kwok, PhD	Senior Pharmaceutical Quality Assessor, DPQA I, OPQA I, OPQ, FDA
	Satyashodhan Patil, BE, PGDIBO	DGM (R&D)-Device Development, Sun Pharmaceutical Industries Ltd.
3:25 PM – 3:45 PM	***Coffee Break***	
3:45 PM – 4:20PM	**Symposium III Report Out**	
	Facilitator:	
	Katharine B. Feibus, MD	Team Leader, Device Evaluation Team, DTP I, ORS, OGD, FDA
4:20 PM– 4:40 PM	***Lessons Learned and Looking Toward the Future***	
	Markham Luke, MD, PhD	Director, DTP I, ORS, OGD, FDA

Appendix of Abbreviations

AFMESA	Air Force Medical Evaluation and Support Activity
AMM	Association for Accessible Medicines
ANDA	Abbreviated New Drug Application
ASCPT	American Society for Clinical Pharmacology & Therapeutics
ASQ	American Society for Quality
BCPS	Board Certified Pharmacotherapy Specialist
BE	Bioequivalence
BEng	Bachelor of Engineering
BME	Biomedical Engineering
BS	Bachelor of Science
CAPA	Corrective and Preventive Actions
CDER	Center for Drug Evaluation and Research
CDRH	Center for Devices and Radiological Health
CEO	Chief Executive Officer
CHC	Certified in Healthcare Compliance
CHRC	Certified in Healthcare Research Compliance
CDR	Commander in the U.S. Public Health Service
CPD	Combination Products and Devices
CRCG	Center for Research on Complex Generics
CSPS	Clinical and Scientific Policy Staff
CUHF	Comparative Use Human Factors
DB	Division of Biostatistics
DCR	Division of Clinical Review
DCSS	Division of Clinical Safety and Strategies
DDCP	Drug-Device Combination Product
DGM	Deputy General Manager
DHF	Design History File
DHHS	Department of Health and Human Services
DLBP	Division of Liquid-Based Products
DMEPA	Division of Medication Errors and Risk Analysis
DNDP	Division of New Drug Products
DPD	Division of Policy Development
DPhil	Doctor of Philosophy
DPQA	Division of Pharmaceutical Quality Assessment
DPQR	Division of Pharmaceutical Quality Research
DQMM	Division of Quantitative Methods and Modeling
DTP	Division of Therapeutic Performance
EUA	Emergency Use Authorization
FDA	Food and Drug Administration
FTC	Federal Trade Commission
HFU	Human Factors and Usability
HHS	U.S. Department of Health and Human Services
IHS	Indian Health Service
Inc	Incorporated

IND	Investigational New Drug
ISDA	Infectious Disease Society of America
ISO	International Organization for Standardization
JD	Juris Doctor
Ltd	Limited
MBA	Master of Business
MD	Doctor of Medicine
MDes	Master of Design
MEng	Master of Engineering
MPH	Master of Public Health
MPharm	Master of Pharmacy
MS, MSc	Master of Science
NASEM	National Academies of Sciences, Engineering, and Medicine
OB	Office of Biostatistics
OBDS	On Body Delivery Systems
OGD	Office of Generic Drugs
OGDP	Office of Generic Drug Policy
OINDP	Orally inhaled and Nasal Drug Products
OLDP	Office of Lifecycle Drug Product
OMEPRM	Office of Medication Error Prevention and Risk Management
OPEQ	Office of Product Evaluation and Quality
OPPQ	Office of Policy and Pharmaceutical Quality
OPQ	Office of Pharmaceutical Quality
ORISE	Oak Ridge Institute for Science and Education
OPQA	Office of Pharmaceutical Quality Assessment
OPQR	Office of Pharmaceutical Quality Research
ORS	Office of Research and Standards
OSCE	Office of Safety and Clinical Evaluation
OSE	Office of Surveillance and Epidemiology
OTS	Office of Translational Sciences
PEUA	Pre-Emergency Use Authorization
PFS	Prefilled Syringes
PGDIBO	Post Graduate Diploma in International Business Operation
PharmD	Doctor of Pharmacy
PhD	Doctor of Philosophy
PLM	Product Lifecycle Management
PMP	Project Management Professional
RAC	Regulatory Affairs Certification
R&D	Research and Development
REMS	Risk Evaluation and Mitigation
RLD	Reference Listed Drug
Sr	Senior
UI	User Interface
USP	US Pharmacopeia