HFES
Systems That Work for Humans

HFES INTERNATIONAL SYMPOSIUM

on Human Factors and Ergonomics in Health Care

March 24-27, 2024

Hilton Chicago Hotel
Chicago, IL

2024

User Interface Design Taxonomy: A Systematic and Repeatable Method for Identifying and Classifying Design Differences in Combination Products

Katharine B Feibus, MD, Lead Physician, Device Evaluation Team
Division of Therapeutic Performance-1, Office of Research & Standards
Office of Generic Drugs, CDER, FDA

Megan Conrad, PhD, Associate Professor of Mechanical Engineering
College of Engineering, University of Detroit Mercy

Molly Laird, PhD, Human Factors ….

HFES
Systems That Work for Humans

Important Dates: FDA Generic Drug Regulation & DDCPs

1984

Hatch-Waxman Act – 505(j) pathway for ANDAs established for generic drugs

2012

GDUFA program established, and Office of Generic Drugs (OGD) becomes a CDER Super-Office; GDUFA research program established

2017

Publication of Draft Guidance on Comparative Analyses & Related CUHF Studies for a DDCP Submitted in an ANDA

GDUFA II begins.

2020

OGD's Office of Research and Standards pilots Device Evaluation Team to support pre-ANDA comparative user interface review for DDCPs

2021

Grant Request for Applications issued, submissions reviewed, awards made for FY22 funding to support

2023/2024

FDA & Center for Research on Complex Generics host course and workshop focused on industry challenges with comparative user interface assessment during generic DDCP development

DDCP = drug-device combination product

Generic Drug v. Reference Listed Drug

- **RLD (Reference Listed Drug)**[1]
  - The listed drug identified by FDA as the drug product upon which an applicant relies in seeking approval of its ANDA.

- An approved generic drug is presumed to be therapeutically equivalent (TE) to its RLD, which means it is pharmaceutically equivalent (PE), bioequivalent (BE), and can be expected to have the same clinical effect and safety profile as the RLD when administered to patients under the conditions specified in the labeling.

[1] 21 CFR 314.3(b); Drugs@FDA Glossary of Terms at https://www.fda.gov/drugs/drug-approvals-and-databases/drugsfda-glossary-terms#:~:text=FDA%20considers%20drug%20products%20to,identical%20in%20strength%20or%20concentration

21 CFR Part 314.3(b) - Generic Drugs

Pharmaceutical Equivalence (PE)

- Identical **dosage forms**
- Identical **route(s) of administration**
- Contain **identical amounts** of the identical **active drug ingredient**
- Deliver identical amounts of the active ingredient over the identical dosing period
- Meet the identical compendial or other applicable standard of identity, strength, quality, and purity

Bioequivalence (BE)

- Absence of a significant difference in the **rate and extent** to which the active ingredient or active moiety becomes available **at the site of drug action** when administered at the same molar **dose under similar conditions** in an appropriately designed study

Therapeutic Equivalence (TE)

- Same clinical effect and safety profile
- Substitutable at the pharmacy
- No additional training needed

Slide adapted from Ja Hye Myung, PhD, 08/18/2022, Introduction of Bioequivalence for Generic Drug Products

Generic Drug Products: Regulatory Framework

- **Therapeutic equivalence:**
  - A generic drug product must be therapeutically equivalent to its reference listed drug (RLD), which means it "*. . . can be expected to have the **same clinical effect and safety profile*** when administered to patients under the *conditions specified in the labeling.*"
  - **Same expectations** apply for generic drug-device combination products
  - FDA considers whether end-users can use the generic combination product when it is substituted for the RLD-without intervention of a healthcare professional and/or without additional training prior to use of the generic combination product
- **Note:** Generic and RLD products **do not** need to be identical as long as the differences do not preclude approval under an abbreviated new drug application (ANDA)

FDA Draft Guidance "Comparative Analyses and Related Comparative Use Human Factors Studies for a Drug-Device Combination Product Submitted in an ANDA"
https://www.fda.gov/regulatory-information/search-fda-guidance-documents/comparative-analyses-and-related-comparative-use-human-factors-studies-drug-device-combination

Key Definitions

User Interface (UI)

- All components of the product with which a user interacts
- Includes delivery device constituent part and any associated controls, displays, product labeling, and packaging

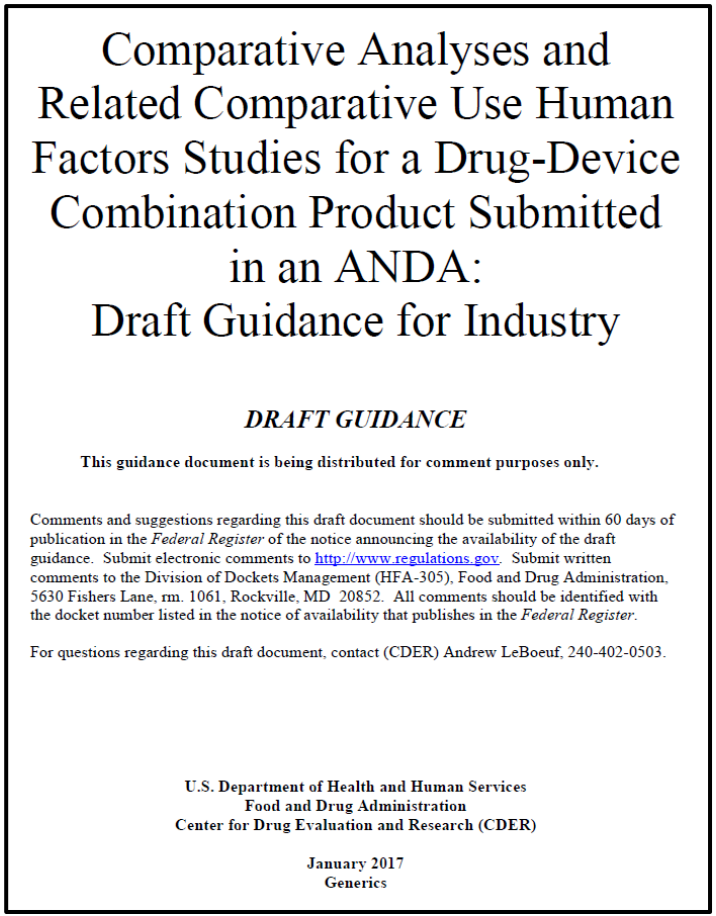
Critical Task

- A user task that, if performed incorrectly or not performed at all, would or could cause harm to the patient or user, where harm is defined to include compromised care

External critical design attribute

- A feature that directly affects how users perform a critical task that is necessary in order to use or administer the drug product

Draft Comparative Analyses Guidance



Comparative Analyses and Related Comparative Use Human Factors Studies for a Drug-Device Combination Product Submitted in an ANDA:
Draft Guidance for Industry

DRAFT GUIDANCE

This guidance document is being distributed for comment purposes only.

Comments and suggestions regarding this draft document should be submitted within 60 days of publication in the *Federal Register* of the notice announcing the availability of the draft guidance. Submit electronic comments to http://www.regulations.gov. Submit written comments to the Division of Dockets Management (HFA-305), Food and Drug Administration, 5630 Fishers Lane, rm. 1061, Rockville, MD 20852. All comments should be identified with the docket number listed in the notice of availability that publishes in the *Federal Register*.

For questions regarding this draft document, contact (CDER) Andrew LeBoeuf, 240-402-0503.

U.S. Department of Health and Human Services
Food and Drug Administration
Center for Drug Evaluation and Research (CDER)

January 2017
Generics

Labeling comparison: FDA recommends a side-by-side, line-by-line comparison of the full prescribing information, instructions for use, and descriptions of the delivery device constituent parts of the generic combination product and its RLD.

Comparative task analysis: FDA recommends that potential applicants conduct a comparative task analysis between the RLD and the proposed generic combination product.

Physical comparison *between RLD and generic device constituent parts:* FDA recommends that the potential applicant of the proposed generic combination product acquire the RLD to examine and compare (e.g., visual and tactile examination) the physical features of the device user interfaces of the RLD and proposed generic products.

Access at:
https://www.fda.gov/regulatory-information/search-fda-guidance-documents/comparative-analyses-and-related-comparative-use-human-factors-studies-drug-device-combination

www.fda.gov

Comparative Analyses Outcomes

- For each physical, task, or labeling comparison performed during CA, provide one of the following outcomes:
  - **No Differences**
  - **Minor Design Difference**
    - If the difference in the user interface of the proposed generic combination product, in comparison to the user interface of the RLD do not affect an external critical design attribute
  - **Other Design Difference**
    - If any aspect of the comparative analyses suggests that difference in the design of the user interface of a proposed combination product as compared to the RLD *may* impact an external critical design attribute -that involves administration of the product
- Consider any identified differences in the context of the overall risk profile of the product

The Importance of Context of Use

Context of use

- **Urgency of use**: Emergency vs. non-emergency
- **Frequency of use**: Single use vs. repeated use
- **End-users**: Patients, caregivers, healthcare professionals
- **Environment of use**:
  - Clinical: hospital, clinic
  - Nonclinical: home, school, etc.
- **Patient population**:
  - Dexterity issues (rheumatologic, neuromuscular disorder)
  - Incapacitated (naloxone HCl)

- For 2 products with different context of use, the same UI difference could be classified and assessed differently.
- Need to focus on the individual RLD

OGD Cleared

DDCPs & Therapeutic Equivalence

- Challenges:
  - Identifying critical tasks vs. non-critical tasks
  - Deciding whether a user interface (UI) difference is “minor” vs. “other” design difference
  - How to justify other design differences – how this can be done without comparative use human factors studies.

- Focus of 2021 Request for (Grant) Applications:

  The categorization of design differences in UI as "minor" or "other" depends on several factors including, but not limited to:

  - External critical design attributes and critical tasks impacted
  - Indication(s) for use
  - End-user population.

  In certain instances, depending on how these factors are impacted by the design differences in the user interface, the categorization as "minor" or "other" can be challenging.

Grant Goal

- Develop methods for evaluating the impact of differences in the design of the user interface between the generic DDCP and the RLD.
- The project should:
  1. Investigate methods that have the potential to support the categorization of differences in the design of the user interface (minor design differences or other design differences) and
  2. Explore different approaches (using in vivo and/or in vitro methods) to assess other design differences as potential alternatives to comparative use human factors (CUHF) studies.
- The outcomes of this project will help to improve the understanding of the factors related to design differences of the user interface that impact substitutability between generic and RLD DDCPs for intended end-user groups.