U.S. FOOD & DRUG ADMINISTRATION

Regulation of SaMD in the U.S.

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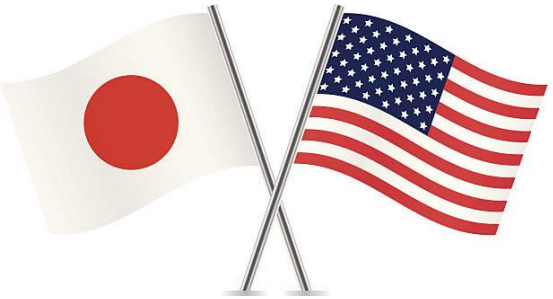


FDA Center for Devices and Radiological Health (CDRH)

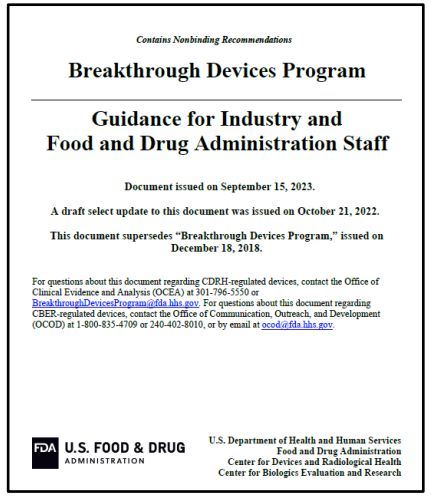
- Ensure patients and providers have timely and continued access to safe, effective, and high-quality medical devices and safe radiation-emitting products

- Facilitates medical device innovation by advancing regulatory science, providing industry with predictable, consistent, transparent, and efficient regulatory pathways, and assuring consumer confidence in devices marketed in the U.S.

How does CDRH promote innovation of digital health technologies?

- General regulatory pathways
- Digital health-specific approaches
- Clinical evaluation tools

Regulatory Pathways



Contains Nonbinding Recommendations

Breakthrough Devices Program

Guidance for Industry and Food and Drug Administration Staff

Document issued on September 15, 2023.

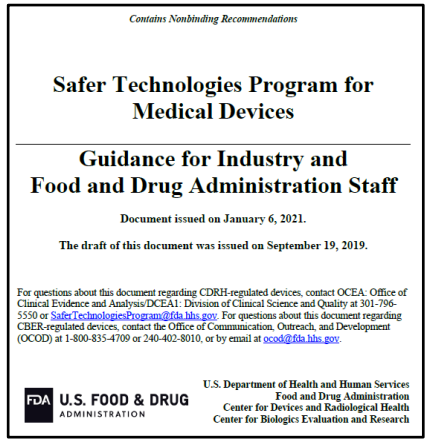
A draft select update to this document was issued on October 21, 2022.

This document supersedes "Breakthrough Devices Program," issued on December 18, 2018.

For questions about this document regarding CDRH-regulated devices, contact the Office of Clinical Evidence and Analysis (OCEA) at 301-796-5550 or BreakthroughDevicesProgram@fda.hhs.gov. For questions about this document regarding CBER-regulated devices, contact the Office of Communication, Outreach, and Development (OCOD) at 1-800-835-4709 or 240-402-8010, or by email at ocod@fda.hhs.gov.

FDA U.S. FOOD & DRUG ADMINISTRATION

U.S. Department of Health and Human Services
Food and Drug Administration
Center for Devices and Radiological Health
Center for Biologics Evaluation and Research



Contains Nonbinding Recommendations

Safer Technologies Program for Medical Devices

Guidance for Industry and Food and Drug Administration Staff

Document issued on January 6, 2021.

The draft of this document was issued on September 19, 2019.

For questions about this document regarding CDRH-regulated devices, contact OCEA: Office of Clinical Evidence and Analysis/DCEA1: Division of Clinical Science and Quality at 301-796-5550 or SaferTechnologiesProgram@fda.hhs.gov. For questions about this document regarding CBER-regulated devices, contact the Office of Communication, Outreach, and Development (OCOD) at 1-800-835-4709 or 240-402-8010, or by email at ocod@fda.hhs.gov.

FDA U.S. FOOD & DRUG ADMINISTRATION

U.S. Department of Health and Human Services
Food and Drug Administration
Center for Devices and Radiological Health
Center for Biologics Evaluation and Research

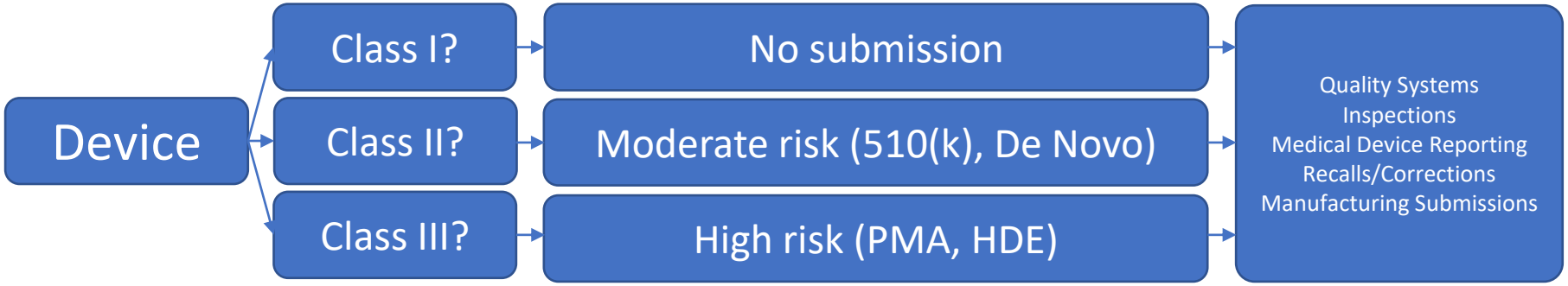
- Breakthrough Device Program (BD)
  - Devices providing more effective diagnosis /treatment of life-threatening/irreversibly debilitating disease as compared to available alternatives
- Safer Technologies Program (STeP)
  - Non-breakthrough devices offering safety advantages as compared to available alternatives

Breakthrough Device/STeP Features

- Increased opportunity for communication with CDRH
- Early engagement on data development plans
- Devices more likely to involve consideration of:
  - Benefit-risk assessment
  - Creative and flexible clinical study designs
  - Premarket-postmarket balance

Regulation of Digital Health

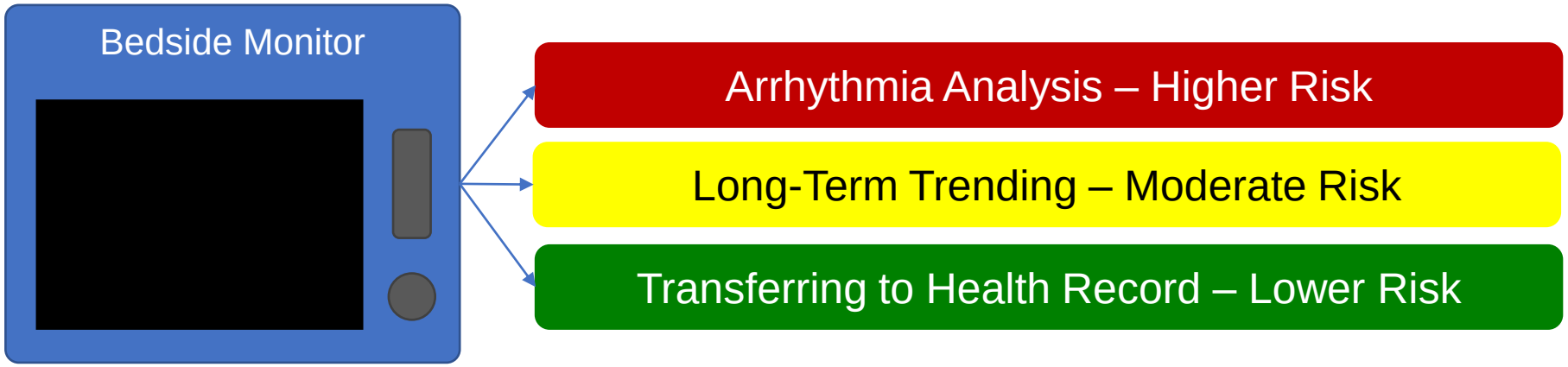
- DH technologies are regulated similarly to traditional devices



- However, some SaMD aspects involve more risk than others

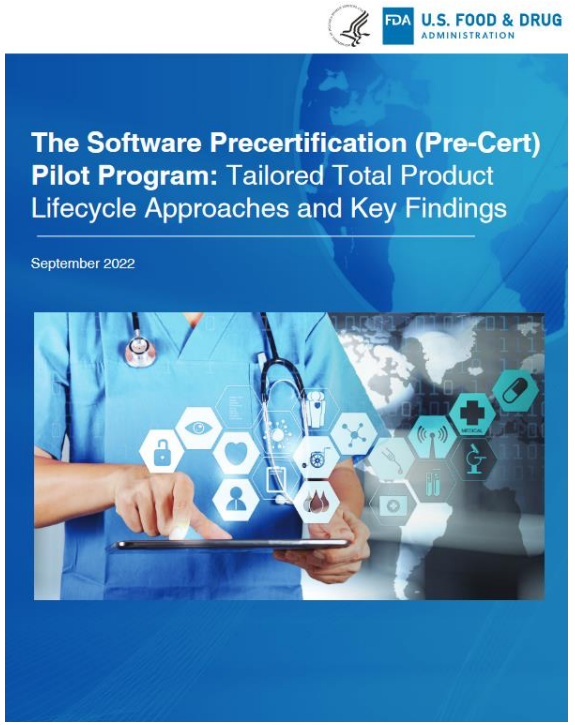
Software as a Medical Device (SaMD)

- Take “function-based” approach and regulate functions individually
  - Impact assessment
  - Some functions exempt by law or policy



Software Pre-Certification Pilot

Goal: Provide a streamlined path to market for innovative SaMD products



Completed September 2022

Artificial Intelligence / Machine Learning (AI/ML)

- Unique challenges associated with growth in AI/ML:
  - Datasets
  - “Black box” algorithms
  - Validation
  - Communicating with clinicians and patients
  - Facilitating innovation and iterative development

GMLP Guidelines

Goal: Facilitate development of Good Machine Learning Practices that address important AI/ML topics

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Good Machine Learning Practice for Medical Device Development: Guiding Principles

October 2021

Good Machine Learning Practice for Medical Device Development: Guiding Principles	
Multi-Disciplinary Expertise are Leveraged Throughout the Total Product Life Cycle	Good Software Engineering and Security Practices are Implemented
Clinical Study Participants and Data Sets are Representative of the Intended Population.	Training Data Sets are Independent of Test Sets
Selected Reference Datasets are Based Upon Best Available Methods	Model Design is Tailored to the Available Data and Reflects the Intended Use of the Device
Focus is Placed on the Performance of the Human-AI Team	Testing Demonstrates Device Performance during Clinically Relevant Conditions
Users are Provided Essential Information Clearly	Deployed Models are Monitored for Performance and Re-training Risks are Managed

U.S. FOOD & DRUG ADMINISTRATION | Health Canada Santé Canada | Medicines & Healthcare products Regulatory Agency

Predetermined Change Control Plans for Machine Learning-Enabled Medical Devices: Guiding Principles

October 2023

Internationally, the medical device community is discussing the use of predetermined change control plans (PCCPs) as a way of managing certain device changes where regulatory authorization before marketing is typically required. PCCPs can be used to help:

- align regulatory processes with the rapid and ongoing approach to change management in MLMDs
- manage risks in a timely and ongoing fashion through monitoring, maintenance, and/or improving device performance
- uphold high regulatory standards to ensure device safety and effectiveness.

For this document, the term PCCP describes a plan, proposed by a manufacturer, that specifies:

- certain planned modifications to a device
- the protocol for implementing and controlling those modifications and
- the assessment of impacts from modifications.

PCCPs may be developed and implemented in different ways in different regulatory jurisdictions.

Pre-Determined Change Control Plan (PCCP)

- Allows for iterative changes after devices receive marketing authorization
  - Signed into law in December 2022
  - Not limited to AI/ML devices

DRAFT: For AI/ML Devices		
Description of Modifications	Modification Protocol	Impact Assessment
What are the specific, planned modifications?	• Methods used to develop, validate, and implement proposed modifications. • Test methods, analyses, and acceptance criteria. • Ensure maintenance of documentation. • Ensure risks identified in Impact Assessment. • Be least burdensome.	• Methods to compare changed device with original device. • Benefits/risks of each modification. • Rationale for modification protocol. • Impact of one modification on others. • Collective impact.

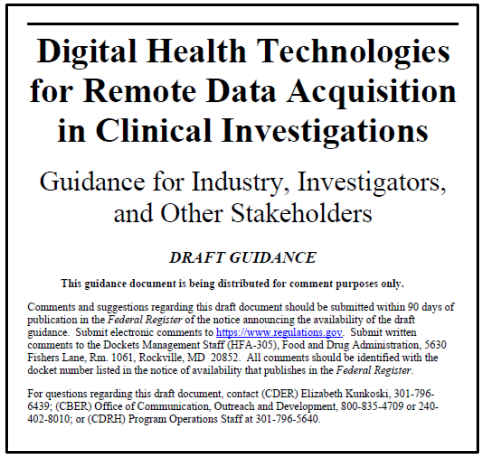
Decentralized Clinical Trials

Utilize DH technologies for:

- Remote monitoring
- Patient-reported outcomes

Support appropriate use via:

- Verification/validation
- Training (patients and caregivers)



Digital Health Technologies for Remote Data Acquisition in Clinical Investigations

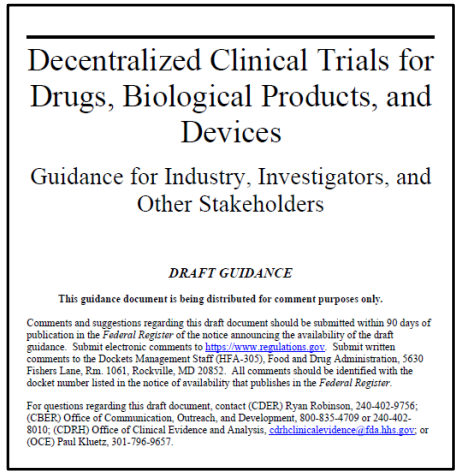
Guidance for Industry, Investigators, and Other Stakeholders

DRAFT GUIDANCE

This guidance document is being distributed for comment purposes only.

Comments and suggestions regarding this draft document should be submitted within 90 days of publication in the *Federal Register* of the notice announcing the availability of the draft guidance. Submit electronic comments to https://www.regulations.gov. Submit written comments to the Dockets Management Staff (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) Elizabeth Kunkoski, 301-796-6439; (CBER) Office of Communication, Outreach and Development, 800-835-4709 or 240-402-8010; or (CDRH) Program Operations Staff at 301-796-5640.



Decentralized Clinical Trials for Drugs, Biological Products, and Devices

Guidance for Industry, Investigators, and Other Stakeholders

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For questions regarding this draft document, contact (CDER) Ryan Robinson, 240-402-9756; (CBER) Office of Communication, Outreach, and Development, 800-835-4709 or 240-402-8010; (CDRH) Office of Clinical Evidence and Analysis, cdrhclinicalevidence@fda.hhs.gov; or (OCE) Paul Kluetz, 301-796-9657.

How do international efforts promote DH innovation?

Global Innovation

Ongoing innovation of medical devices creates additional global value in:

- Aligning regulatory approaches
- Building platforms to better evaluate devices across their lifetimes
- Establishing networks

Additional Opportunities

- Consider global clinical and regulatory strategies for digital health technologies

- Proactive discussions with global partners can help align approaches and promote access
  - Regulators
  - Industry
  - Outreach to other stakeholders

Thank You!

Nicole.Ibrahim@fda.hhs.gov