

Medical Device Regulation, Safety, and the FDA

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CENTER FOR DEVICES AND RADIOLOGIC HEALTH
OFFICE OF DEVICE EVALUATION
DIVISION OF CARDIOVASCULAR DEVICES
VASCULAR SURGERY DEVICES BRANCH

Center for Devices and Radiological Health

- **The mission of the CDRH is to protect and promote the public health**
- **Assure that patients and providers have timely and continued access to safe, effective, and high-quality medical devices**

Vascular Access Products Regulated by FDA

CENTER/ OFFICE/ DIVISION/ BRANCH	PRODUCTS
CDRH /ODE / DCD/ VSDB	Synthetic AV grafts, bovine AVG Stents, stent-grafts & DCB used in access Devices to create AVF
CDRH / ODE / DRGUID	CV catheters, dialysis needles
CDER / Division of CV and Renal Products	Drugs & therapeutic proteins to improve AVF maturation and function
CBER / Office of Tissues & Advanced Therapy	Tissue engineered grafts; cell , gene and tissue based therapies

FDA Regulatory Perspectives for Studies on Hemodialysis Vascular Access

Frank P. Hurst,* Robert E. Lee,* Aliza M. Thompson,[†] Brian D. Pullin,* and Douglas M. Silverstein*

Abstract

In an effort to foster innovation and new product development, the American Society of Nephrology and the US Food and Drug Administration partnered to form the Kidney Health Initiative in 2012. Part of the Kidney Health Initiative's mission is to foster development of therapies by creating a collaborative environment where the US Food and Drug Administration and the greater nephrology community can interact to optimize product evaluation. This particular Kidney Health Initiative project focused on products related to hemodialysis vascular access, with the goal of clarifying appropriate trial end points that could subsequently inform clinical, regulatory, and coverage decisions. Both the lack of common definitions and the lack of consensus on trial end points have been viewed as barriers to innovation in this area. Toward this end, the Kidney Health Initiative convened teams of expert stakeholders to address these issues for each major vascular access category (arteriovenous grafts, arteriovenous fistulas, and central venous catheters), and each team provided recommendations. This commentary provides an overview of the US Food and Drug Administration centers that regulate hemodialysis vascular access and certain laws and regulations that affect these products as well as our perspectives on some of the issues raised and end points proposed by the Kidney Health Initiative teams. The standardized definitions and clinical trial end points proposed by the teams represent an important step forward to improve innovation in this area.

Centers for *Devices and Radiological Health and [†]Drug Evaluation and Research, Food and Drug Administration, Silver Spring, Maryland

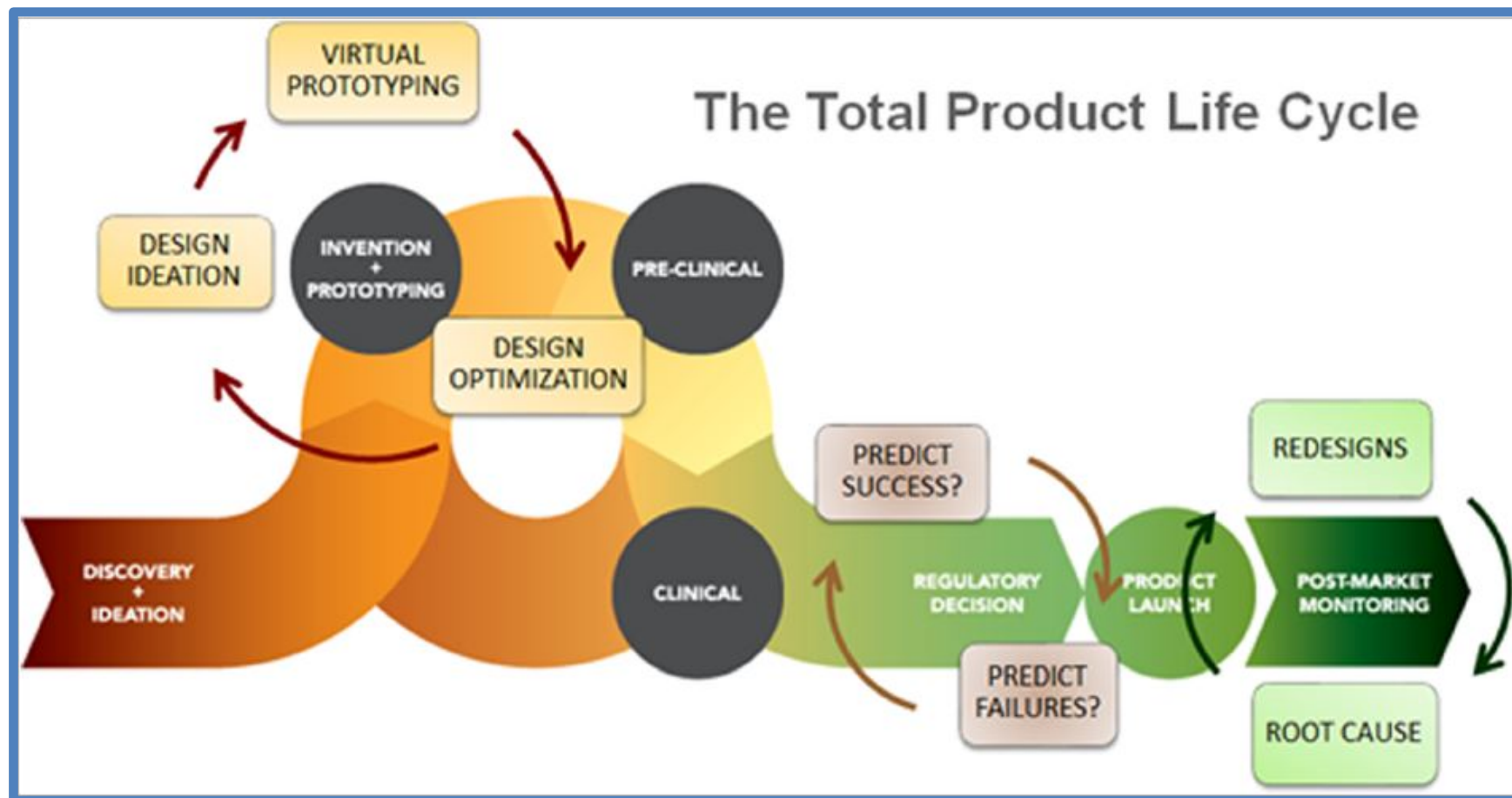
Correspondence: Dr. Frank P. Hurst, Kidney Health Initiative, American Society of Nephrology, 1510 H Street NW, Suite 800, Washington, DC 20005.

Clin J Am Soc Nephrol, 2018, Vol.13, No. 3, pp 513-518

<https://www.ncbi.nlm.nih.gov/pubmed/28739575>

Risk Classification vs. Pathway

CATEGORY	EXAMPLE	REGULATORY PATHWAY
Class I	Scalpel	Exempt from pre-market Notification
Class II	PTFE Graft	Premarket notification: 510(k)
Class III	Bovine Carotid Artery Graft	Pre-Market Application: PMA



The Role of Computational Modeling and Simulation in the Total Product Life Cycle of Peripheral Vascular Devices. TM Morrison, et. al.

[Journal of Medical Devices, 2017;11\(2\):024503-024503-5](#)



**Medical
Device Safety
Reporting
Needs You!**

Medical Device Reporting

WHO?

- **MANDATORY: 21 CFR 803**
 - Manufacturers
 - Importers
 - Health Care Facilities
- **VOLUNTARY**
 - Health Care Providers
 - Consumers

WHAT?

- Therapeutic Failures
- Product Quality Issues
- Serious Adverse Events (SAEs)
 - Death
 - Life threatening
 - Disability / Hospitalization
 - Requiring intervention
 - Congenital anomalies

MedWatch Voluntary Reporting

Download FDA Form 3500

Web based report form

1-800-FDA-1088: Phone

1-800-FDA-0178: FAX

Form 3500 B for Consumers

U.S. Department of Health and Human Services
MEDWATCH
The FDA Safety Information and Adverse Event Reporting Program

For VOLUNTARY reporting of adverse events, product problems and product use errors

Form Approved OMB No. 0915-0291 Expires 03/02/10
See FDA statement on reverse

Page 1 of 3

FDA USE ONLY
Page and Assurance #
FDA Rec. Date

Note: For date prompts of "dd-mm-yyyy" please use 2-digit day, 3-letter month abbreviation, and 4-digit year; for example, 01-Jul-2010.

A. PATIENT INFORMATION

1. Patient Identifier
2. Age (Years) ☐ Month(s) ☐ Week(s) ☐ Day(s)
or Date of Birth (e.g., 08 Feb 1925)
3. Sex ☐ Male ☐ Female
4. Weight ☐ lb ☐ kg

5.a. Ethnicity (Check all that apply)
☐ Hispanic/Latino ☐ Asian ☐ American Indian or Alaskan Native
☐ Not Hispanic/Latino ☐ Black or African American ☐ White
☐ Native Hawaiian or Other Pacific Islander

5.b. Race (Check all that apply)
☐ Asian ☐ American Indian or Alaskan Native
☐ Black or African American ☐ White
☐ Native Hawaiian or Other Pacific Islander

B. ADVERSE EVENT, PRODUCT PROBLEM

1. Check all that apply:
☐ Adverse Event ☐ Product Problem (e.g., defects/misfunctions)
☐ Product Use Error ☐ Problem with Different Manufacturer of Same Medicine

2. Outcome Attributed to Adverse Event (Check all that apply):
☐ Death - Include date (dd-mm-yyyy)
☐ Life-threatening ☐ Disability or Permanent Damage
☐ Hospitalization - Initial or prolonged ☐ Congenital Anomaly/Birth Defects
☐ Other Serious (Important Medical Events)
☐ Required Intervention to Prevent Permanent Impairment/Damage (Devices)

3. Date of Event (dd-mm-yyyy)
4. Date of this Report (dd-mm-yyyy)

5. Describe Event, Problem or Product Use Error
(Continue on page 3)

6. Relevant Tests/Laboratory Data, Including Dates
(Continue on page 3)

7. Other Relevant History, Including Preexisting Medical Conditions (e.g., allergies, pregnancy, smoking and alcohol use, liver/kidney problems, etc.)
(Continue on page 3)

C. PRODUCT AVAILABILITY

2. Product Available for Evaluation? (Do not send product to FDA)
☐ Yes ☐ No ☐ Returned to Manufacturer on (dd-mm-yyyy)

D. SUSPECT PRODUCTS

1. Name, Manufacturer/Compounder, Strength (from product label)

#1 - Name and Strength
#1 - Manufacturer/Compounder
#1 - Lot #

#2 - Name and Strength
#2 - NDC # or Unique ID
#2 - Manufacturer/Compounder
#2 - Lot #

E. SUSPECT MEDICAL DEVICE

1. Brand Name
2. Common Device Name
3. Manufacturer Name, City and State
4. Model #
5. Operator of Device
☐ Health Professional
☐ Lay User/Patient
☐ Other

6. (If Implanted, Give Date (dd-mm-yyyy))
7. (If Expiration Date (dd-mm-yyyy))

8. Is this a single-use device that was reprocessed and reused on a patient? ☐ Yes ☐ No

9. If Yes to Item 8, Enter Name and Address of Reprocessor

F. OTHER (CONCOMITANT) MEDICAL PRODUCTS

Product names and therapy dates (Exclude treatment of event)
(Continue on page 3)

G. REPORTER (See confidentiality section on back)

1. Name and Address
Last Name: First Name:
Address:
City: State/Province/Region:
Country: ZIP/Postal Code:
Phone #: Email:
2. Health Professional? ☐ Yes ☐ No
3. Occupation:
4. Also Reported to:
☐ Manufacturer/Compounder
☐ User Facility
☐ Distributor/Importer

5. If you do NOT want your identity disclosed to the manufacturer, please mark this box: ☐

FORM FDA 3500 (10/16) Submission of a report does not constitute an admission that medical personnel or the product caused or contributed to the event.

Post-Market Safety Assurance

- **Post-approval studies** mandated by conditions of PMA approval
- **Postmarket surveillance studies** (also referred to as “**522 studies**”) for devices:
 - failure would be reasonably likely to have serious adverse health consequences,
 - significant use is expected in pediatric populations,
 - intended to be implanted in the body for more than one year; or
 - life-sustaining or life-supporting and used outside a device user facility.

Medical Device Safety Action Plan:
Protecting Patients,
Promoting Public Health

MEDICAL DEVICE ACTION SAFETY PLAN

**Announced on April 18 by
FDA Commissioner Scott
Gottlieb, MD**

**Outlines a vision for how FDA
can enhance programs and
processes to bring added
assurance of medical device
safety to the public.**

Focus of Medical Device Safety Plan

- Establish a robust medical device patient safety net;
- Explore regulatory options to streamline and modernize timely implementation of postmarket mitigations;
- Spur innovation towards safer medical devices;
- Integrate CDRH's premarket and postmarket offices and activities to advance the use of a Total Product Life Cycle (TPLC) approach to device safety; and
- Advance medical device cybersecurity.

Use of Real World Evidence

- **2017 Strategic Goal of FDA: Increase use of RWE to support regulatory decision making**
- **Real-world evidence: that derived from multiple sources outside typical clinical research settings**
- **Provides insight into device performance outside the controlled environment of studies**

Contains Nonbinding Recommendations

Use of Real-World Evidence to Support Regulatory Decision-Making for Medical Devices

Guidance for Industry and Food and Drug Administration Staff

Document issued on August 31, 2017.

The draft of this document was issued on July 27, 2016

For questions about this document regarding CDRH-regulated devices, contact the Office of Surveillance and Biometrics (OSB) at 301-796-5997 or CDRHClinicalEvidence@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.

**U.S. Department of Health and Human Services
Food and Drug Administration**



**Center for Devices and Radiological Health
Center for Biologics Evaluation and Research**

FDA Guidance Document on Use of Real World Evidence

August 2017

Challenges of Access Trials

- **Sick patients, 20% mortality**
- **High attrition rates**
- **Predialysis subjects may not need access use**
- **AVF may not mature in the best of hands**
- **Lack of uniformity in study endpoints**

Benefits of Access Registry

- **Real world treatment success rates**
- **Effectiveness of pre-maturation interventions**
- **Durability of novel therapies**
- **Identify patient subgroups likely to benefit**
- **Outcome trends, modify treatment paradigms**
- **Economic benefits and cost savings**

Conclusions:

- **Medical device safety begins with a careful premarket evaluation**
- **Demands the engagement of multiple stakeholders over the total product life cycle of a device, including users and patients**
- **Establishing an access registry would yield many benefits, providing a solid foundation of RWE to enhance patient outcomes**

Questions?



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