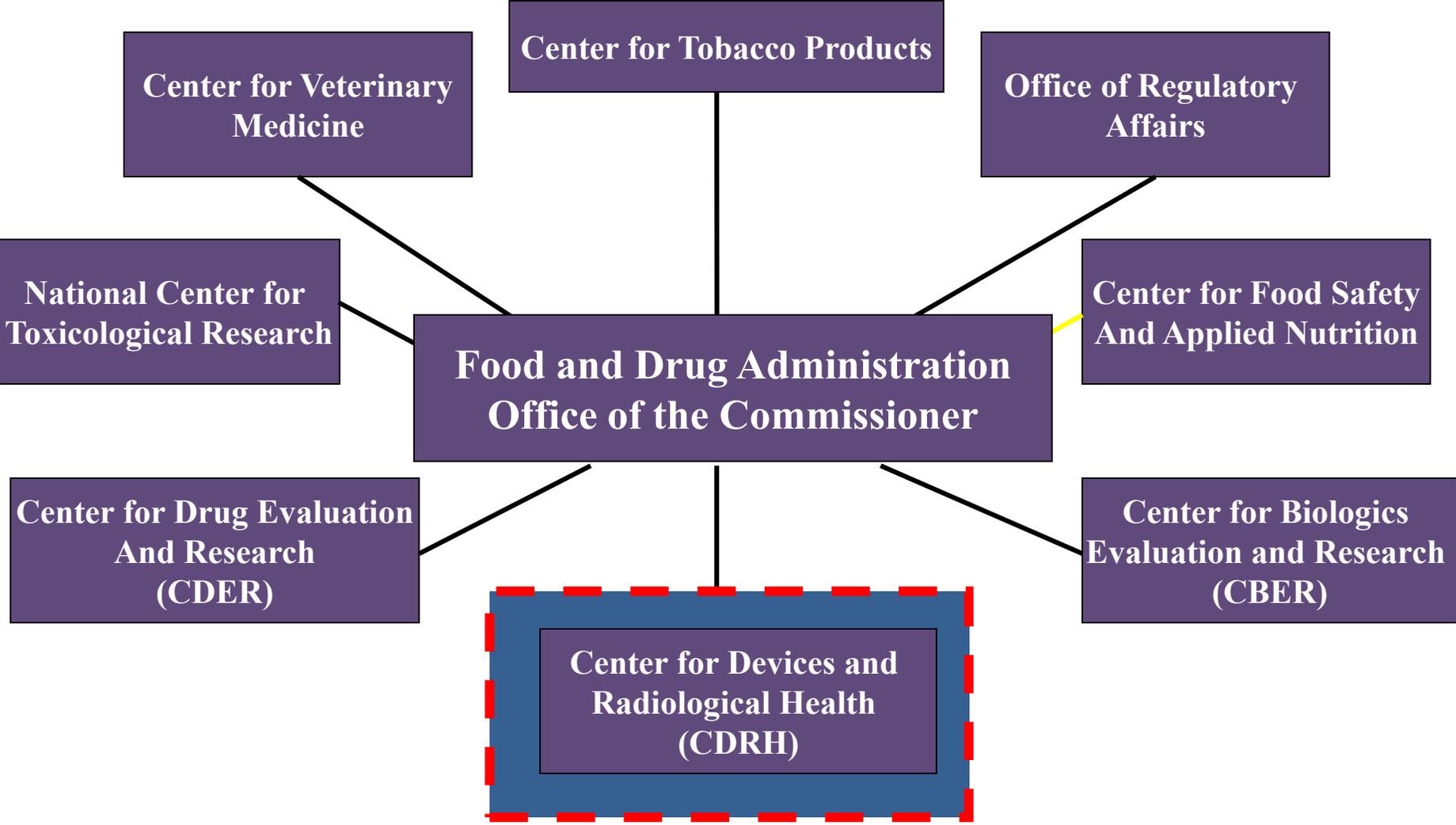




Early Feasibility Studies Overview

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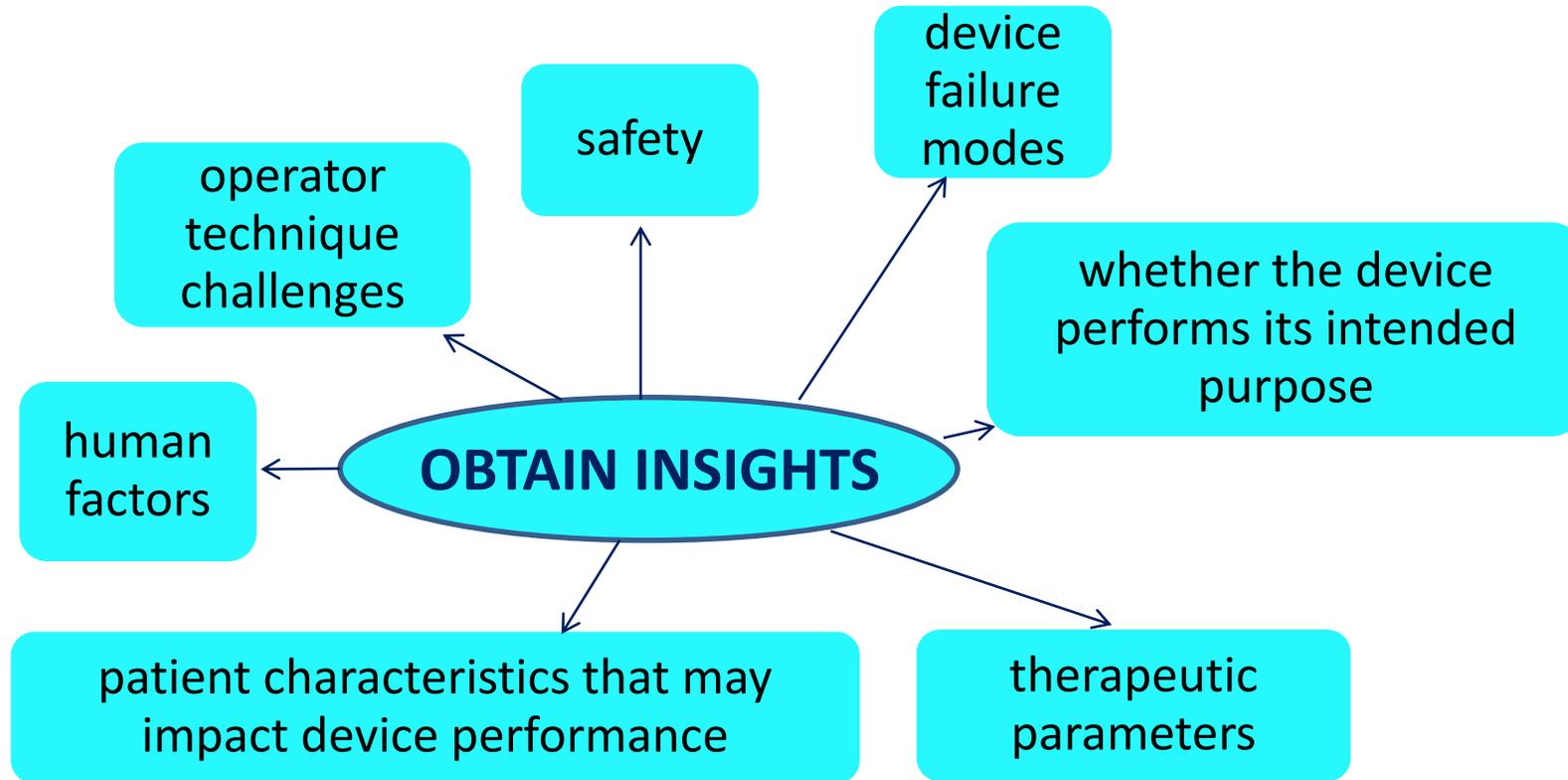
FDA's Organizational Structure



What is an Investigational Device Exemption (IDE)?

- IDE approval is issued by the FDA to allow the use of significant risk investigational devices in humans.
- An approved IDE:
 - Provides protection to human subjects (e.g., informed consent);
 - Requires study monitoring; and
 - Allows shipping of devices
- Clinical study data collected under an IDE can be used to support a marketing application for a device.

Purposes of Early Feasibility Studies (EFS)



Early clinical experience

- Provides the basis for iteration & product improvement
- Integral to the device development process

Acknowledging Problems With Medical Device Innovation and Development in the US

- Migration of initial clinical testing of novel devices overseas
- Growing time lag in the access to beneficial medical devices for US patients
- Delay in physician experience with new products



US was the 42nd nation to approve a TAVR device

Many clinical trial ecosystem factors contributed to these trends including FDA's requirements for non-clinical testing prior to initiating clinical studies of new devices.



EFS Program Objectives

- Re-establish and/or increase US participation in the early clinical evaluation of innovative medical devices under the current US regulations
- Provide the earliest patient access to potentially beneficial medical devices in the US
- Enhance collaboration among device developers, industry, regulators, and investigators
- Protect study participants

**Investigational Device Exemptions
(IDEs) for Early Feasibility
Medical Device Clinical Studies,
Including Certain First in Human
(FIH) Studies**

**Guidance for Industry and Food
and Drug Administration Staff**

Document issued on: October 1, 2013

What's an EFS?

Elements that define an EFS:

- Small number of subjects
- Device may be early in development and before the device design has been finalized
- Does not necessarily involve the first clinical use
- Needed when information to advance device development cannot be practically obtained with additional nonclinical assessments, or nonclinical tests are unavailable

How is an EFS Different From a Traditional Feasibility/Pilot Study?



- An EFS generally involves a device that is earlier in development compared one to those being evaluated in a traditional feasibility study, which typically involves a more finalized device design.
- For an EFS, clinical data may be needed to advance product development, with some nonclinical testing deferred until the device is more final or after the use is refined.
- An EFS may therefore be supported by less nonclinical data than would be expected for a traditional feasibility study.

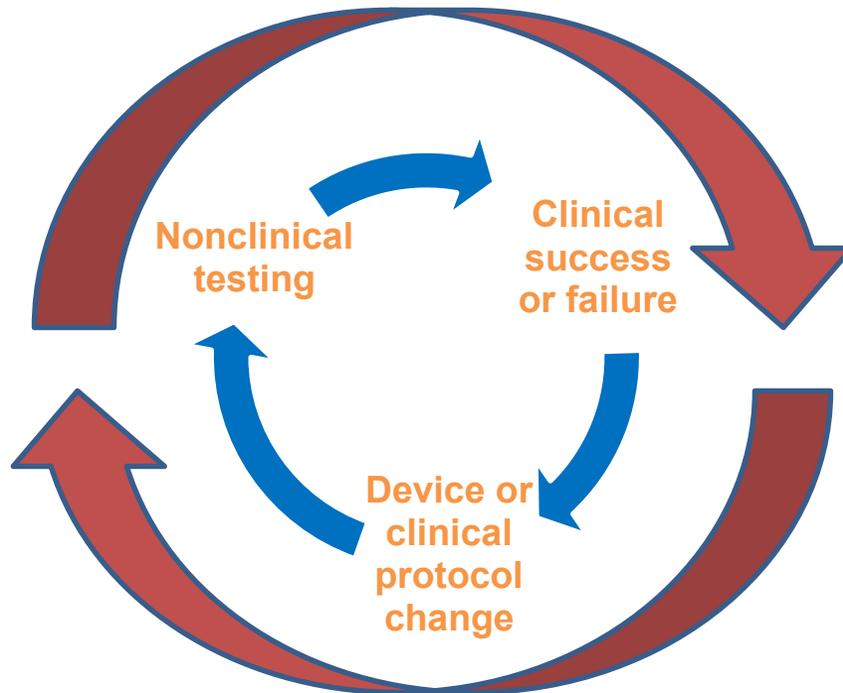
Key EFS Program Provision



- Provides new ways for sponsors and regulators to support the transition from bench to bedside with an increased focus on:
 - Clinical condition
 - Availability, benefits, and risks of alternative treatments
 - Risk mitigation strategies, enhanced monitoring, and a tailored consent process to enhance patient safety

Device Iteration During an EFS

Experience and knowledge gained from initial study subjects can guide device or protocol changes



The EFS Guidance includes new tools to facilitate timely device and clinical protocol modifications

Protecting Study Subjects

IRBs, Consent, and Risk Mitigation Strategies

EFS informed consent element examples:

- Define an EFS: A study of an innovative device or innovative use of a device in a small number of patients
- Explain that there may be unforeseeable risks associated with participation in an EFS due to limitations in available data and experience with the device
- Indicate how the procedures and follow-up differ from the standard of care
- Describe anticipated benefits but acknowledge that there may be limited information to support a likelihood of personal benefit

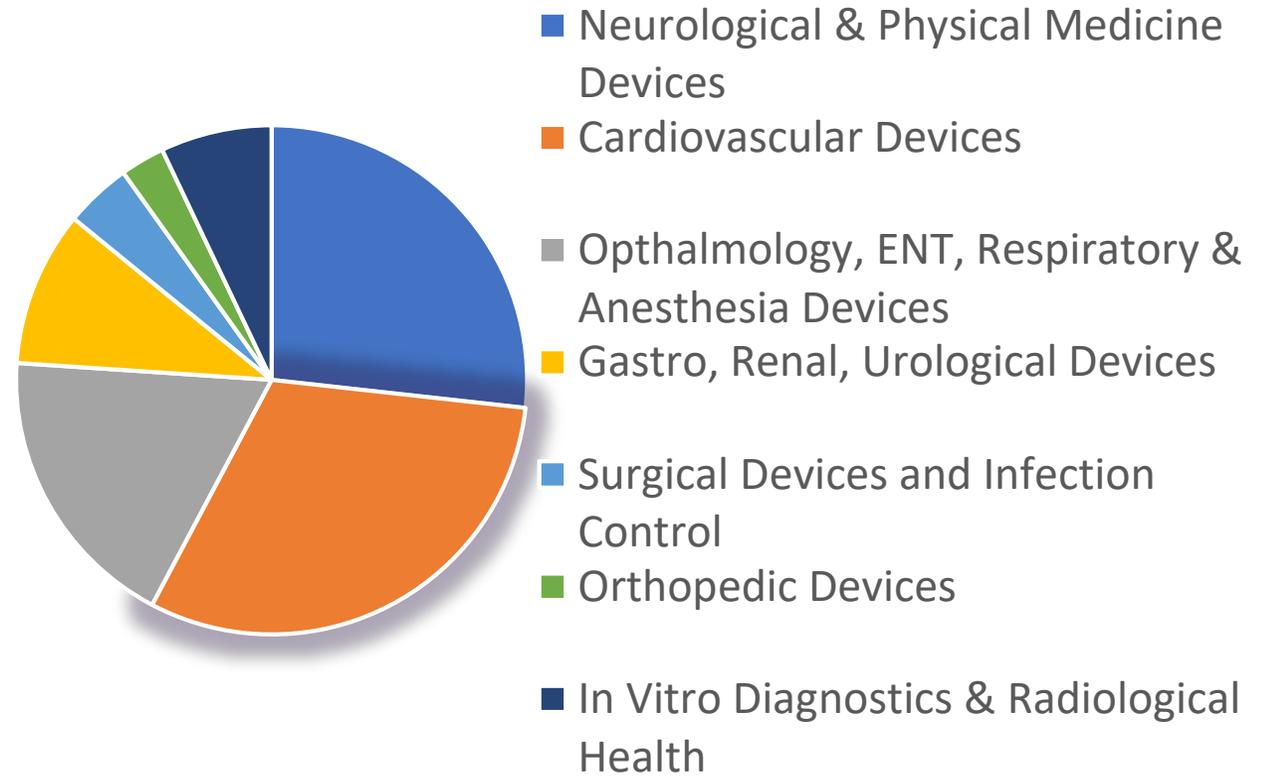
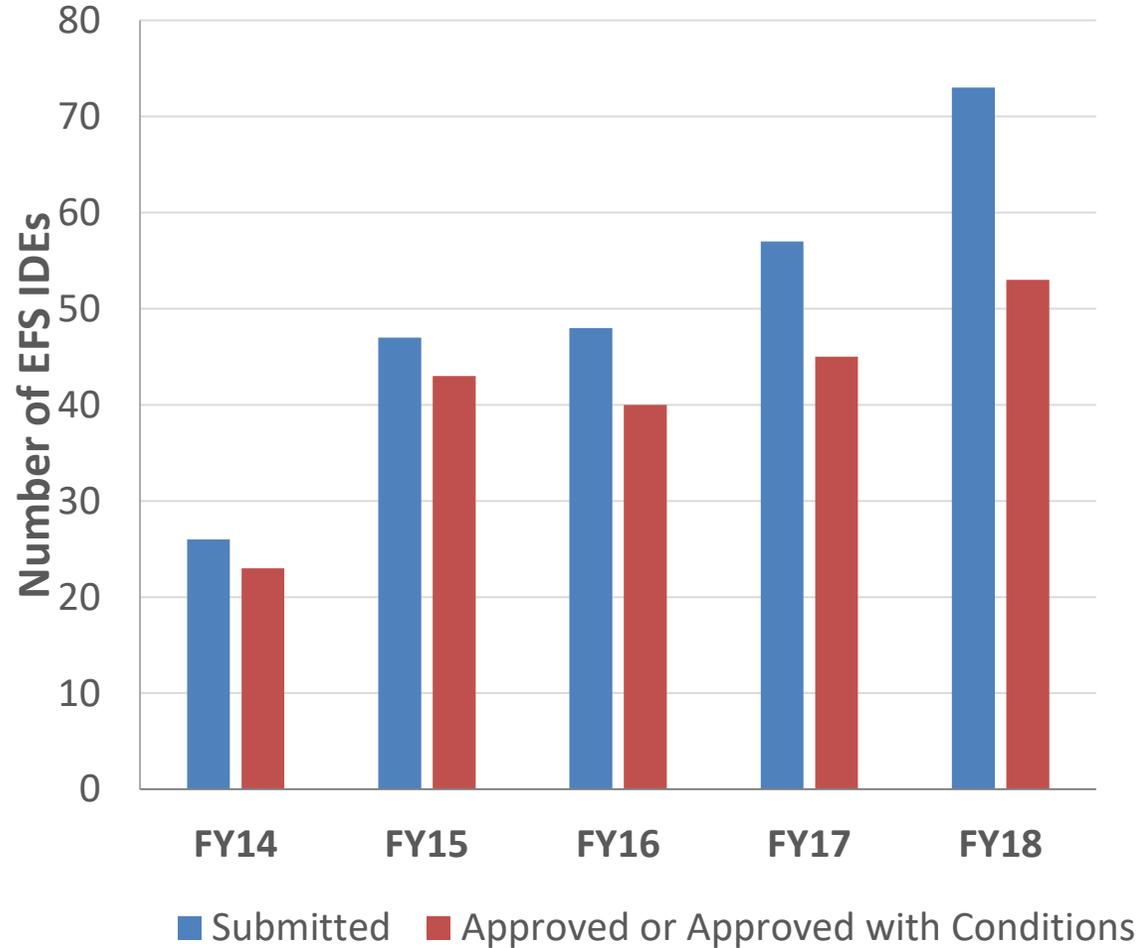
Risk mitigation examples:

- Study sites with sufficient expertise and resources to manage adverse events
- Qualified investigators
- Enhanced monitoring and follow-up testing of study subjects
- Periodic patient outcome assessments prior to enrollment of additional patients
- Timely reporting of serious adverse events and device performance parameters to sponsors (and IRB and FDA, as needed)

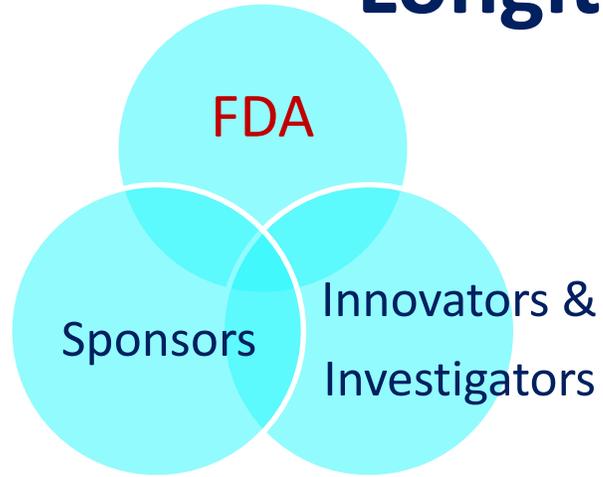
EFS Program Growth



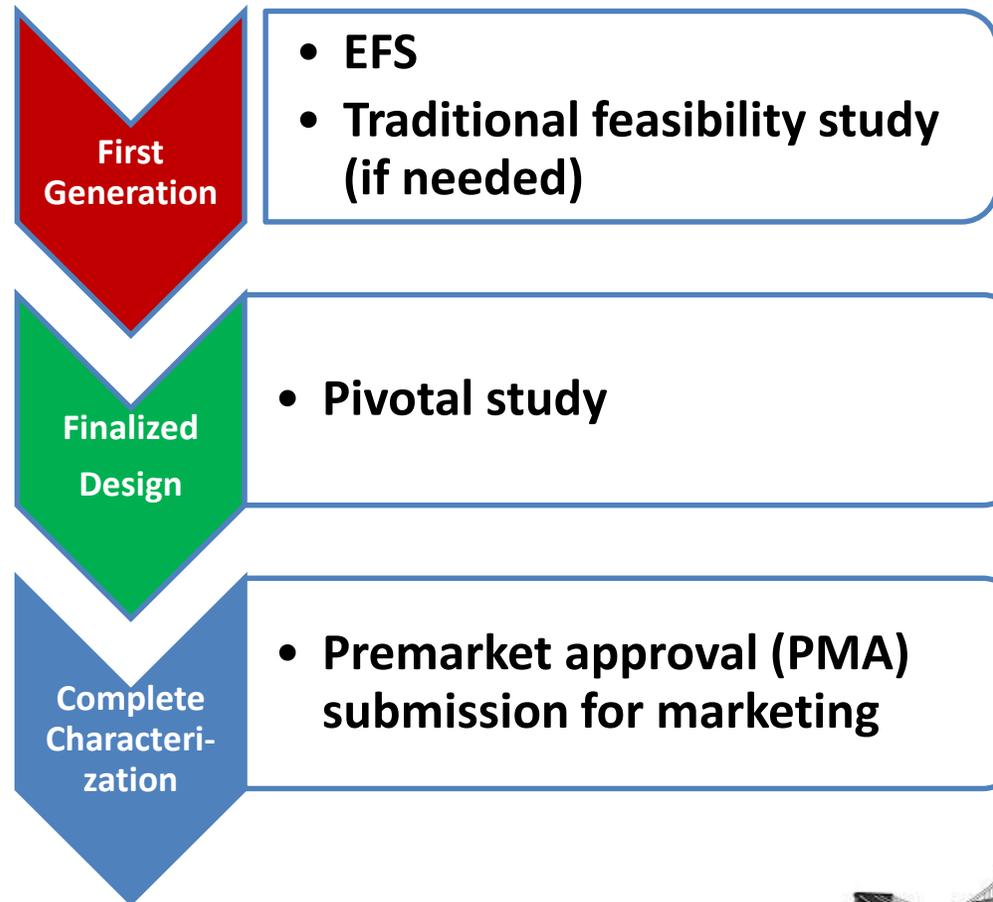
Finalized EFS Guidance document issued October 1, 2013



Longitudinal EFS Benefits



- Familiarity with the technology and regulatory considerations throughout product development
- Consensus on data requirements to move forward from bench to clinical use
- Smoother transitions between types of clinical studies



Building a Successful US EFS Ecosystem

REVIEW TOPIC OF THE WEEK

JACC 2016;68:1908-15

Overcoming the Challenges of Conducting Early Feasibility Studies of Medical Devices in the United States



David R. Holmes, Jr, MD,^a Robert Califf, MD,^b Andrew Farb, MD,^b Dorothy Abel, BSBME,^b Michael Mack, MD,^c Tamara Syrek Jensen, JD,^d Bram Zuckerman, MD,^b Martin Leon, MD,^e Jeff Shuren, MD^b

- **Gov't: FDA and CMS**
- **Industry Sponsors**
- **Inventors/Innovators**
- **Investigators**
- **Private Funders and Payers**
- **Study subjects**
- **Clinical Sites**

Addressing the Clinical Trial Ecosystem to Improve the Climate for US EFS



Multi-stakeholder effort organized under the Medical Device Innovation Consortium (MDIC)

- Collaboratively develop and adopt best practices of study conduct
- Participants: Industry, FDA, CMS, clinical sites, investigators
- Targets for streamlining:
 - IRB approval
 - Contracting
 - Site start-up and enrollment
 - Reimbursement
- Vision: A voluntary, open research network of clinical sites that are committed to high quality, efficiently executed EFS

60/60 EFS goal: First 60 days for IRB and contract approval/Next 60 days to first patient enrolled

The EFS Program and Device Innovation

FDA and Beyond



- The EFS Program is integral to FDA's mission and has fostered a paradigm shift in performing early phase device studies in the US.
- FDA continues to facilitate interactions among stakeholders to address EFS start-up challenges.
- A successful US EFS Program requires successful clinical sites.

Improving the EFS ecosystem requires the commitment of industry, investigators, regulators, and clinical sites.



