Benefit-Risk Throughout The Medical Device Lifecycle: Premarket, Postmarket, and Compliance

FDA Small Business Regulatory Education for Industry (REdI)

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August 27, 2020

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Hypothetical Example

Benefit-Risk Questions

- How does new information about device's performance impact overall benefit-risk profile?
- Can risks be mitigated through changes in the indications for use, instructions for use and/or inclusion of new warnings in labeling?
- Should the public continue to have access to the device?
- If devices are removed from field, hundreds of surgical procedures will be canceled.
  - What alternative treatments will be available for patients?

Benefits and Risks

Learning Objectives

- Describe why CDRH uses benefit-risk considerations in decision making
- List some of the benefit-risk factors CDRH applies in decision making
- Describe how benefit-risk assessments are performed

Why CDRH Uses Benefit-Risk Principles in Decision Making

Benefit-Risk Principles
Keep the Focus on Patients

- Highlight role of patient perspectives in premarket decision making
- Increase awareness of patients views about data uncertainty
- Balance patient impact of compliance and enforcement actions with need to protect public health

Benefit-Risk Principles Promote Consistency in Decision Making

- Improve communication between FDA and stakeholders by providing clear expectations about benefit-risk assessments
- Provide framework to consistently and systematically weigh medical device benefits against medical device risks

Benefit-Risk Principles Support Innovation

- Customize approaches to managing medical device issues by balancing benefits and risks

- Work with Least Burdensome principles:
  - ensure that devices with favorable benefit-risk profile reach market
  - with minimum amount of information necessary
  - to address regulatory questions or issues

List Benefit-Risk Factors CDRH Applies In Decision Making

Examples of Benefit Factors

- Type of benefit
- Magnitude of benefit
- Duration of effect
- Patient perspective on benefit
- Medical necessity

Examples of Risk Factors

- Severity, types, number and rates of harmful events including:
  - Device-related deaths and serious adverse events
  - Device-related non-serious adverse events
  - Device-related events without reported harm
- Likelihood of risk
- Duration of exposure to population

Examples of Additional Factors

- Uncertainty
- Mitigations
- Patient Impact
- Firm Compliance History

Describe How Benefit-Risk (B-R) Assessments Are Performed

Select Appropriate Benefit-Risk Factors for Application or Issue

Abbreviated Compliance Example

Benefit

- How does the device benefit the patient?
- What is the patient's perspective on benefit?
- Is the device medically necessary?

Risk

- What is the severity of the risk?
- What is the likelihood of harm?
- Will patients tolerate the risks?

Other Factors

- How much uncertainty is there?
- What was the nature of the violation or nonconformity?
- What is the firm's compliance history?

B-R Approach: Investigational Device Exemptions (IDE)

- FDA may disapprove an IDE application if, “[t]here is reason to believe that the risks to the subjects are not outweighed by the anticipated benefits to the subjects and the importance of the knowledge to be gained.” 21 CFR 812.30(b)(4)
- At earlier stages of device development, FDA considers appropriate mitigation measures for anticipated possible risks and unanticipated risks
- In later stages, FDA considers whether risk mitigation measures focus on the most probable risks

Investigational Device Exemption Example

B-R Approach: Premarket Notifications (510(k))

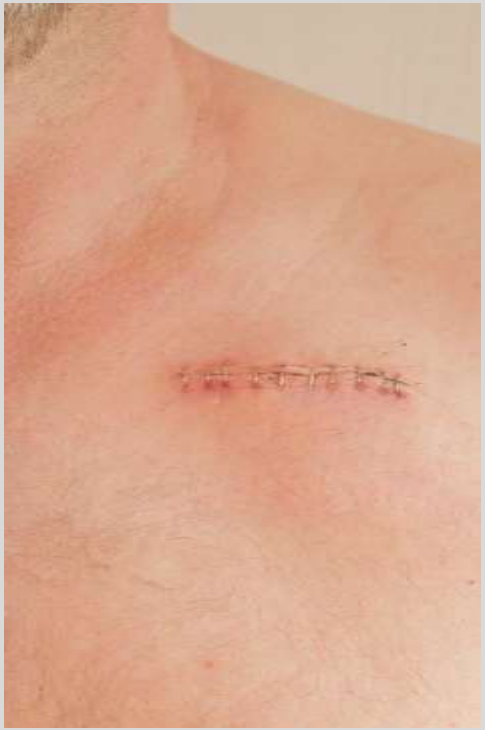
- Substantial Equivalence (SE) Standard
- Weigh probable benefits against probable risks
- Benefit-risk profile of new device doesn't need to be identical to predicate device for substantial equivalence

510(k) Example

B-R Approach: PMA and De Novo Classifications

- Reasonable Assurance of Safety and Effectiveness Standard
- Weigh probable benefits against probable risks
- De Novo:
  - low- to moderate-risk devices
  - may not need to confer as substantial a benefit to patients
  - for favorable benefit-risk profile

PMA Example



B-R Approach: Product Availability, Compliance and Enforcement Decisions

- Benefit-risk factors may be considered when device manufacturers evaluate appropriate responses to nonconforming product or regulatory compliance issues
- FDA may consider benefit-risk factors during the evaluation of various types of compliance and enforcement issues

Compliance Example

Knowledge Check

Which factor is not considered in premarket approval benefit evaluations?

1. Type of Benefit
2. Duration of effect
3. Potential Device Benefit

Knowledge Check

I can market my device using the De Novo Classification pathway if it has no benefits and no risks

1. True
2. False
3. It depends

Summary

- FDA uses benefit-risk to maximize medical device quality and patient safety
- Benefit-risk applies to a broad range of premarket and postmarket situations involving medical devices
- Frequently considered benefit-risk factors include benefit and risk type, magnitude and duration
- Benefit-risk assessment approaches vary according to device type, device issue, impacted patient populations, and other factors

Resources

Cited Resource	URL
Factors to Consider When Making Benefit-Risk Determinations in Medical Device Premarket Approval and De Novo Classifications: Guidance	www.fda.gov/regulatory-information/search-fda-guidance-documents/factors-consider-when-making-benefit-risk-determinations-medical-device-premarket-approval-and-de
Benefit-Risk Factors to Consider When Determining Substantial Equivalence in Premarket Notifications (510(k)) with Different Technological Characteristics: Guidance	www.fda.gov/regulatory-information/search-fda-guidance-documents#guidancesearchhttps://www.fda.gov/regulatory-information/search-fda-guidance-documents/benefit-risk-factors-consider-when-determining-substantial-equivalence-premarket-notifications-510k
Factors to Consider When Making Benefit-Risk Determinations for Medical Device Investigational Device Exemptions: Guidance for	www.fda.gov/regulatory-information/search-fda-guidance-documents#guidancesearchhttps://www.fda.gov/regulatory-information/search-fda-guidance-documents/factors-consider-when-making-benefit-risk-determinations-medical-device-investigational-device
Factors to Consider Regarding Benefit-Risk in Medical Device Product Availability, Compliance, and Enforcement Decisions: Guidance	www.fda.gov/regulatory-information/search-fda-guidance-documents/factors-consider-regarding-benefit-risk-medical-device-product-availability-compliance-and
Consideration of Uncertainty in Making Benefit-Risk Determinations in Medical Device Premarket Approvals, De Novo Classifications, and Humanitarian Device Exemptions	www.fda.gov/regulatory-information/search-fda-guidance-documents/consideration-uncertainty-making-benefit-risk-determinations-medical-device-premarket-approvals-de

Questions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