EXECUTIVE SUMMARY:
A Framework for Incorporating Information on Patient Preferences Regarding Benefit and Risk into Regulatory Assessments of Medical Technology
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The Medical Device Innovation Consortium (MDIC) is the first-ever public-private partnership created with the sole objective of advancing the regulatory science around the development and assessment of medical devices. Members of MDIC share a vision of providing U.S. citizens with timely access to high-quality, safe, and effective medical devices without unnecessary delay.

Background on the MDIC Patient Centered Benefit-Risk Project

The MDIC Patient Centered Benefit-Risk (PCBR) Project grew out of Food and Drug Administration (FDA) Centers for Devices and Radiological Health (CDRH) emphasis on benefit-risk assessment as a central component of the medical device approval process. CDRH's 2012 “Guidance for Industry and Food and Drug Administration Staff Factors to Consider When Making Benefit-Risk Determinations in Medical Device Premarket Approval and De Novo Classifications” discusses the importance of bringing the patient’s perspective into CDRH benefit-risk assessments, and recommends that sponsors interact with FDA staff regarding the development of patient centered benefit-risk information. However, the document does not discuss in what situations or how sponsors should collect and present that information.

Given that there are no widely accepted approaches for assessing patient preferences that have been used in the regulatory process to date, MDIC saw an opportunity to help industry and the FDA think about when and how patient preference information might be incorporated into regulatory decision making. To oversee this project, the MDIC set up a PCBR Steering Committee consisting of interested participants among MDIC’s member organizations supplemented with experts in decision science and preference assessment methods from academia and other organizations. The members of the PCBR Steering Committee are listed in Exhibit 1-2 of the report. The Steering Committee divided the PCBR Project down into two complementary efforts: 1) the development of a “framework” for incorporating patient preference information into benefit-risk assessment, which became this “Framework Report;” and 2) the development of a “catalog of methods” that can be used to collect and analyze patient preference information, which is the “Catalog of Methods” included as Appendix A. The MDIC PCBR Steering Committee contracted the development of the Catalog of Methods to RTI Health Solutions with the assistance of a “Catalog Working Group” that included experts in a variety of methods related to assessing patient preferences, as listed in Exhibit 1-4. Financial support from a FDA BAA contract (HHSF223201400011C) made this Framework Report possible, and was primarily used to fund the work of RTI and outside experts on the Catalog.

Purpose of the PCBR Framework Report

This Framework Report is intended to improve the understanding of industry, FDA staff, and others of how the patient’s perspective might be incorporated into the regulatory approval process. The Framework Report provides background on the concepts of benefit-risk and patient preference, discusses the potential value of including benefit-risk in a regulatory submission, discusses when in the product lifecycle such information might be collected, outlines factors to consider when selecting a patient preference method, and discusses considerations regarding the use of patient preference information in the regulatory process as well as potential uses in the reimbursement, marketing, and shared medical decision making. Appendix A of this report is a “Catalog of Methods of Assessing Patient Preferences,” which is the first compendium of the range of research methods available to collect and analyze patient preference information. The report concludes with a discussion
of areas in which additional work would be useful to improve the ability to collect and use patient preference information in the regulatory approval process.

The Framework Report should be considered an initial thought piece that outlines a range of considerations for how industry and FDA might incorporate patient preference information into the regulatory approval process. The Report is not intended to be a prescriptive, “how-to” guide, nor does it purport to be a definitive document about incorporating patient preference information into the regulatory process. Rather, it is intended to be an initial version of what MDIC hopes will be a working document about this emerging field that is updated over time as industry, FDA, and others gain more experience with collecting and using patient preference information in the regulatory process.

Overview of this Framework Report

Section I: Introduction to the MDIC Patient Centered Benefit-Risk Project Framework Report provides background information on MDIC; the origins of the PCBR Project and the vision and process for developing this Framework Report; and the limitations of the report.

Section II: Patient Centered Benefit-Risk Assessment: Definitions and Background Concepts defines several important terms used throughout the report, including “benefit,” “harm,” “risk,” “preferences,” and product “attributes.” The section also introduces several important concepts regarding patient preferences used through the rest of the report, including “maximum acceptable risk,” “minimum acceptable benefit,” “uncertainty attitude,” and the important concept of “preference sensitive decisions,” which are illustrated in several hypothetical examples.

Section III: Evaluating the Potential Value of Patient Preference Information in Regulatory Benefit-Risk Assessments of Medical Technology discusses how to evaluate whether patient preference information would be valuable in the regulatory consideration of a specific technology. Rather than take an algorithmic or “cookbook” approach, this section discusses three categories of factors to consider in assessing whether patient preference information would be useful in a particular regulatory situation: 1) factors related to the perspective of patients as stakeholders, 2) factors related to the benefit-risk tradeoffs inherent in the use of a particular technology, and 3) factors related to regulatory novelty.

Section IV: Potential Use and Value of Patient Preference Information in the Product Development Lifecycle begins with a discussion of the three major uses of patient preference information: 1) framing benefit risk issues, 2) identifying groups of patients that would prefer the use of a particular technology, and 3) providing the information needed to build a quantitative benefit-risk model. The section then introduces the concept of the product development lifecycle, and goes on to discuss how patient preference information might be useful at each stage of this lifecycle and when in the product lifecycle it might be helpful to collect such information.

Section V: Factors to Consider in Undertaking a Patient Preference Study summarizes the work underlying Appendix A, the Catalog of Methods, including discussing the differences between qualitative and quantitative methods and listing the quantitative methods included in the Catalog. The section then discusses factors that can help someone thinking about undertaking a patient preference study select among the methods available. These factors include: factors related to defining the research question; factors related to the fit of particular methods to the research question; and factors related to the resources available to undertake a patient preference study. The final portion of the section discusses how to use these factors to help select among the methods available.

Section VI: Considerations in Using Patient Preference Information in the Regulatory Process discusses a range of topics, including what roles such information can play in regulatory approval, product labeling, and post-market studies; patient preference information being optional at the election of sponsors; when in the product development cycle to determine if patient preference information should be collected, and how patient preference studies might help identify and understand benefit-risk issues in emerging areas of technology.

Section VII: Potential Value of Patient Preference Information Beyond the Regulatory Process discusses at a high level the potential use of patient preference information in areas outside the regulatory process, namely reimbursement, marketing, and shared medical decision making.

Section VIII: Future Work in the Collection and Use of Patient Preference Information for Regulatory Purposes concludes the report with a discussion of areas for future work that would improve the ability of FDA, industry, and others to collect and use patient preference information in the regulatory process and in the total product lifecycle. The section begins with a summary of the “gap analysis” performed as part of the development of the Catalog of Methods, and then highlights several additional areas for future work identified during the course of the MDIC PCBR Project.
Appendix A: Catalog of Methods for Assessing Patient Preferences for Benefits and Harms of Medical Technologies summarizes the methods available for quantitative assessment of patient preferences regarding the benefit, risks, and other attributes of medical technologies. The Catalog includes a discussion of the key considerations in evaluating these methods, and then reviews each method identified. A concluding section identified areas for future research to improve the ability to assess patient preference information for regulatory purposes.

Appendix B: Glossary of Terms offers a handy summary of terms related to patient preference assessment used throughout the Framework Report and Catalog of Methods.

Key Points Emphasized in the Framework Report

Important take-away points from the PCBR Benefit-Risk Project Framework Report include:

- **Collecting and using patient preference information can help sponsors and the FDA ensure that the benefit-risk assessment process is patient-centric.** Patient preference information can help identify those benefits and harms most important to patients, frame the benefit-risk issues and tradeoffs from the patient perspective, identify whether there are subgroups of patients that would choose to use the technology over other alternatives, and support quantitative benefit-risk modeling that may assist in challenging benefit-risk assessments.

- **Patient preference information does not replace or reduce existing information requirements or change the process for FDA approval of medical technology.** Patient preference information can be a supplement to clinical and safety data and provide additional information for consideration by the FDA, but does not change the existing regulatory requirements.

- **Patient preference information is not a requirement for FDA PMA, 510k or de novo approval of medical devices, and its inclusion in a regulatory submission is optional at the election of the sponsor.** The collection and submission of patient preference information can be viewed as a means of enhancing regulatory submissions to help assure that benefit-risk determinations are patient-centric. Such information can be collected and included in an approval application at the option of the sponsor.

- **The timing for collection of patient preference information is at the discretion of the sponsor, although sponsors may benefit from early conversations with FDA regarding plans for collecting and submitting such information.** Patient preference information can be assessed when the sponsor believes there is a sufficient understanding of the particular benefits and risks expected with the treatment to identify if patient preference information might be valuable in the development or regulatory process. It would be prudent for sponsors to discuss plans for collecting and submitting patient preference information with FDA staff early in the regulatory process.

It is also important to note what this Framework Report is not: it does not represent the opinion or policy of FDA and does not include any specific recommendations to the FDA regarding how to collect or use patient preference information in regulatory approval decisions. It is also not a substitute for FDA guidance documents or for direct discussions with CDRH staff regarding the incorporation of patient preference information into the approval process for a particular technology.

The MDIC PCBR Steering Committee hopes that this Framework Report and the Catalog of Methods will be helpful to those considering undertaking patient preferences studies, and thereby encourage the continued growth and maturation of this field. MDIC and the PCBR Steering Committee welcome constructive feedback on this report and ideas for further work in the field of patient preference assessment.