ASSESSING THE VALUE OF MEDICAL DEVICES – CHOOSING THE BEST PATH FORWARD: WHERE DO WE GO FROM HERE?

An ISPOR Issue Panel by the

Value Assessment of Medical Devices Working Group of the Medical Device and Diagnostic Special Interest Group

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Value Assessment of Medical Devices Working Group

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ASSESSING THE VALUE OF MEDICAL DEVICES – CHOOSING THE BEST PATH FORWARD: WHERE DO WE GO FROM HERE?

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Disclaimer

The views expressed in this presentation are those of the speaker, and do not necessarily represent an official FDA position.

Medical Devices: The Basics

- A **medical device**:
  - diagnoses, cures, lessens, treats, or prevents disease
  - affects the function or structure of the body
  - does not achieve primary intended purposes through chemical action

- FDA's Center for Devices and Radiological Health (CDRH) regulates companies that design, manufacture, repackage, relabel, and/or import medical devices into the United States.
- In addition, CDRH regulates radiation-emitting electronic products
  - under the authorities of the Electronic Product Radiation Control provisions and the Medical Device Amendments of 1976 to the Food, Drug, and Cosmetic Act.
- CDRH also regulates facilities that perform mammography under the authority of the Mammography Quality Standards Act.

- Combination products are therapeutic and diagnostic products that combine drugs, devices, and/or biological products (e.g., drug-eluting stent, insulin injector pens, metered dose inhalers, transdermal patches, etc.).

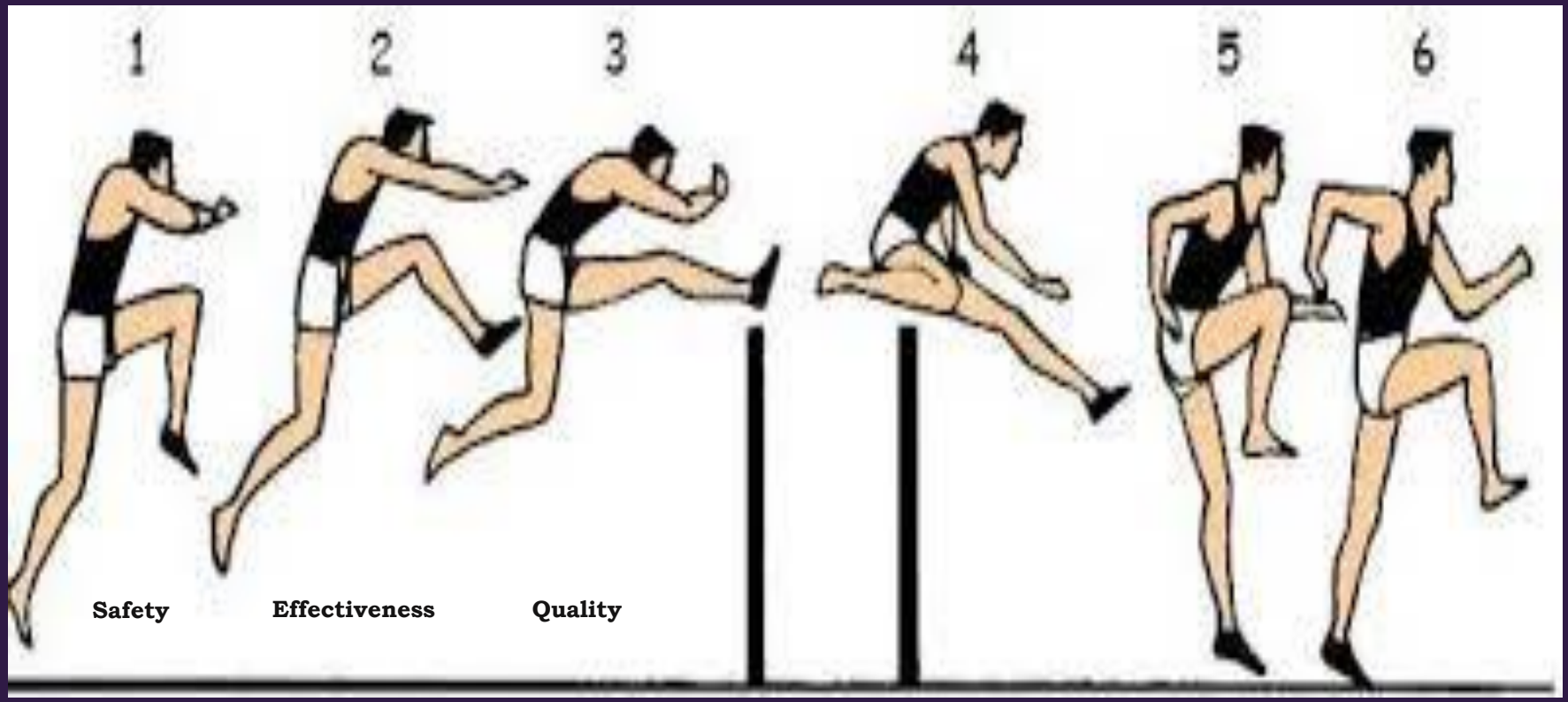
Medical Devices: The Basics

- Differences in regulatory pathways for each component can affect the regulatory processes for all aspects of product development and management, including preclinical testing, clinical investigation, marketing applications, manufacturing and quality control, adverse event reporting, promotion and advertising, and post-approval modifications.

- The Office of Combination Products (OCP) assigns an FDA center to have primary jurisdiction for review of both combination and single entity (i.e., non-combination) products where the jurisdiction is unclear or in dispute.

- There are three device classes:
  - **Class I** devices present a low risk of harm to the user and are subject to general controls .
  - **Class II** devices are more complicated and require special controls for labeling, guidance, tracking, design, performance standards, and post-market monitoring. Most require Premarket Notification 510(k).
  - **Class III** devices usually sustain or support life, are implanted, or present potential unreasonable risk of illness or injury. Most of these devices require Premarket Approval (PMA).

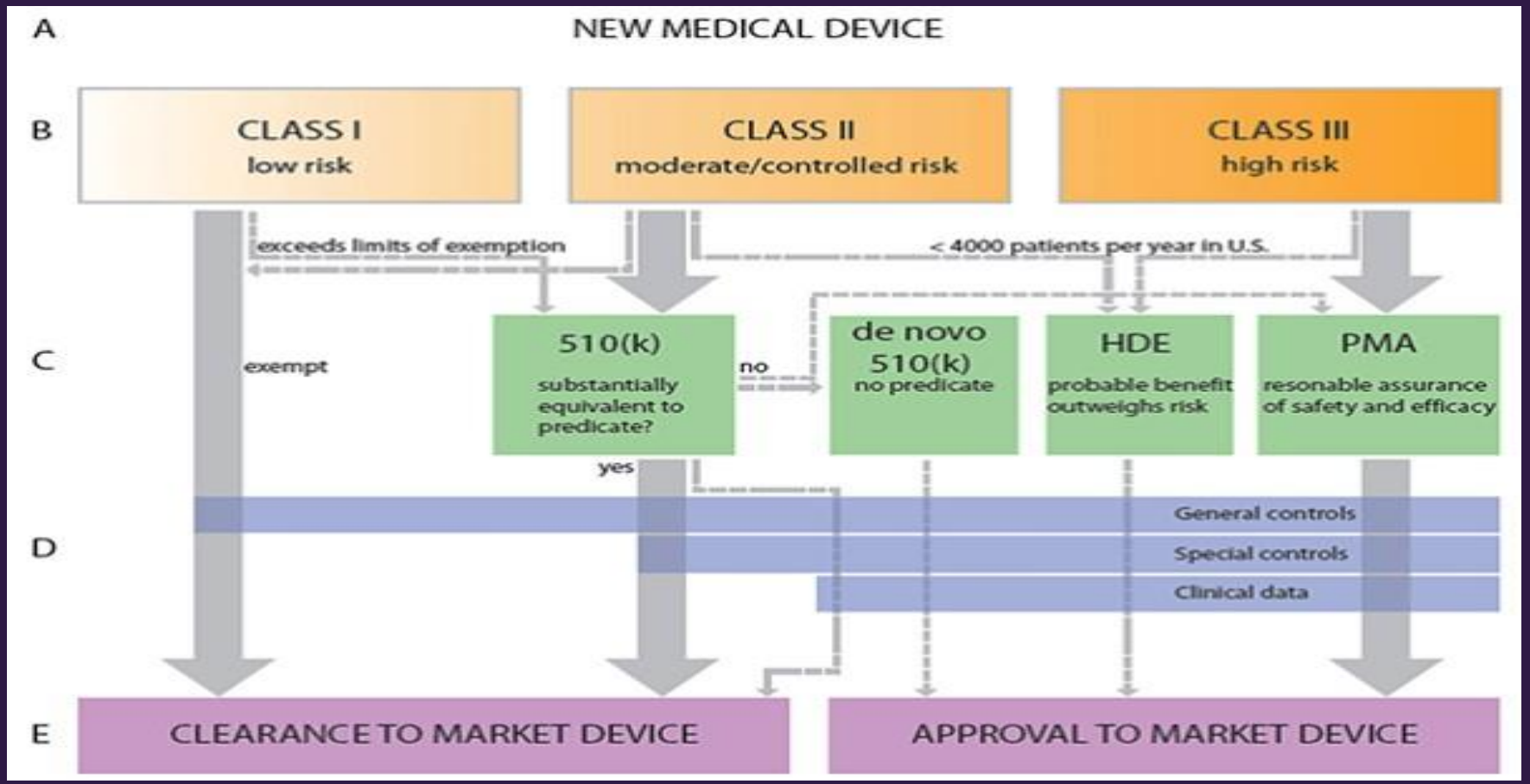
Hurdles to Reimbursement and Market Access: Premarket Requirements



Regulatory

Source: Adapted from http://www.brianmac.co.uk/hurdles/

Hurdles to Reimbursement and Market Access: Premarket Requirements



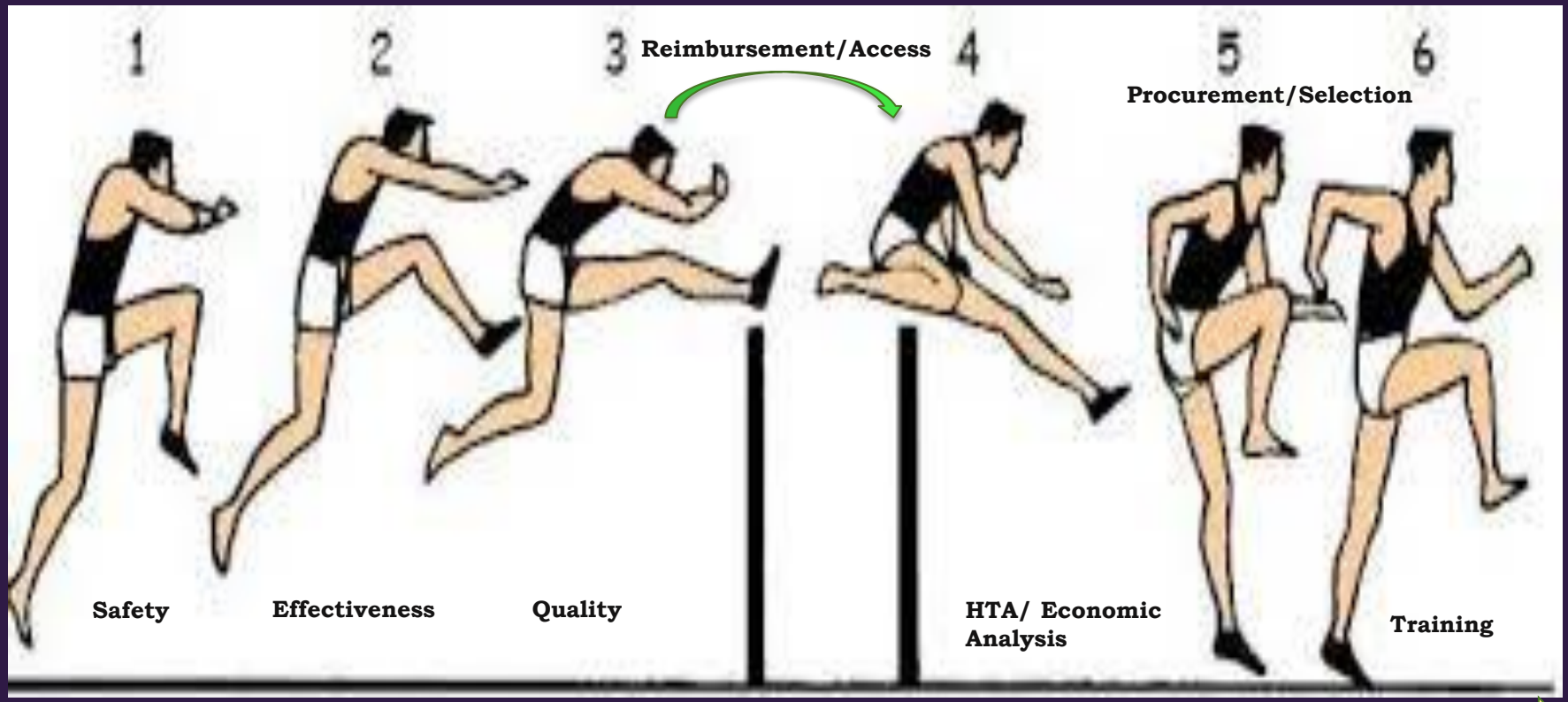
Source: http://libguides.clemson.edu/med-device

Yes, there is a fourth hurdle….

- The hurdles for reimbursement and market access for a new health technology (e.g., devices, medicines, vaccines) are often referred to as **post regulatory hurdle**, **fourth hurdle**, or simply **reimbursement hurdle**
- The hurdles represent the increasing data requirements for reimbursement and market access
  - *Quality of Life*
  - *Cost-effectiveness*
  - *Budget Impact*

Source: http://www.toonvectors.com/clip-art/cartoon-high-hurdle/11057

Hurdles to Market Access and Reimbursement



Source: Adapted from http://www.brianmac.co.uk/hurdles/

The Path Forward….

- Other key challenges facing medical device manufacturers:
  - changes in the regulatory environment
  - cost containment and rising healthcare expenditures
  - adapting to the steady shift in value-based reimbursement
  - the level of evidence requirements
  - upfront cost of demonstrating clinical and economic value
  - competing devices and intellectual property rights (IPR)

Assessing the Clinical and Cost-Effectiveness of Medical Devices and Drugs: Are They That Different?

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Introduction

The term "medical device" covers a wide range of technology. According to the European Union (EU) directive 2007/47/EC, a "medical device" is defined as "any instrument, apparatus, appliance, software, material or other article, whether used alone or in

guidelines on the use of drugs and medical devices based on such a system of HTA and evidence-based appraisal.

Do the conceptual differences in drugs and medical devices require a different framework of HTA or evidence-based appraisal? In this article, we argue that although there are important differences that need to be taken into account when assessing

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VALUE IN HEALTH

Economic Evaluation for Devices and Drugs—Same or Different?

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Introduction

Although the general methods of economic evaluation are well established [1,2], it is often their detailed application that raises methodological challenges. Most international guidelines for economic evaluation, although appearing to be generic, have been written with pharmaceuticals in mind [3]. For example, they typically assume that randomized controlled trials (RCTs) will be available for the assessment of relative treatment effect. In this article, we argue that the economic evaluation of devices raises additional challenges that international guidelines frequently overlook.

Six Reasons Why Devices Are Different

The first reason is the rather obvious one that many devices are diagnostic. This raises two challenges, the first being that the value of improved diagnosis cannot be separated from the value of the improvement in patient outcome resulting from the subsequent treatment. This problem is not insurmountable, but makes the economic evaluation of some devices much more complicated.

A further challenge in the evaluation of diagnostic devices is that they often have multiple applications (e.g., a positron emission tomography scanner). Although this is not unlike the problem that drugs often have multiple indications, the device is indivisible, which means that the overall value of the device is some weighted average of its use in multiple applications. On the other hand, being divisible, the value of a drug can be assessed in each indication, and a judgment reached on each separately.

The second way in which devices are different is in the difficulties in undertaking RCTs. By the time a drug reaches phase III of clinical development, its dosage and route of administration will typically be set. Therefore, although it is well known that the efficacy demonstrated in RCTs does not always translate into practice, the results from trials provide a reasonable basis for conducting an economic evaluation.

On the other hand, devices frequently undergo product modifications, some of which may impact on efficacy. In addition, there is often a "learning curve" associated with the use of a device, particularly those used in surgery. Therefore, an RCT comparing a traditional surgical procedure with a new one involving a device could well be demonstrating the difference between experience with the old procedure versus inexperience with the new, rather than differences between the procedures themselves. This issue was evident in the Conventional versus Laparoscopic-Assisted Surgery In Patients with Colorectal Cancer (CLASICC) trial for laparoscopic colorectal surgery, where outcomes in the laparo-

scopic arm were seen to improve over time as the surgeons gained experience with the new technique [4].

All of this means that there is unlikely to be a substantial "steady-state" period, during which the device could be evaluated in an RCT. Therefore, it might be better to view the clinical and economic evaluation of devices as an iterative approach, with revisions being made to the estimates as more evidence is gathered on effectiveness in actual use.

In addition, it is sometimes more difficult to undertake blinded studies with devices, with the risk that biases can be introduced. For example, blinding can be difficult (indeed unethical) if the alternative would have to be a sham procedure. Also, patients are sometimes reluctant to enter RCTs if they are concerned about being randomized to an invasive surgical procedure, as opposed to a minimally invasive one.

The third reason why devices are different has already been touched upon. Namely, the efficacy of a device depends not only on the device itself, but how it is used. Again, this is particularly true for devices used in surgery, as the clinical outcome can depend on the skill or experience of the surgeon. On the other hand, drugs are a classic case of an "embodied technology." That is, as long as the drug is given in the right dose, the efficacy relates solely to the drug itself, not the person administering it.

The need to adjust for user characteristics further complicates the design of RCTs and user performance is a potential confounder in the analysis of observational data on the efficacy of devices. Indeed, it might be preferable to undertake more multicenter studies than is typical for all but the large phase III studies of drugs. Whether these studies are randomized or not, the statistical analysis would be more complicated, because it would need to allow for treatment center effects. Taken in conjunction with the points made above, it is clear that the design and analysis of clinical studies of devices can be more challenging than comparable studies of drugs.

The fourth way in which devices are different from drugs is that implementation of a new therapy involving a device can have wider economic implications. For example, there may be a need for training, or more fundamentally, the local organizational context may be important for harnessing the improved cost-effectiveness of a device. In the technology assessment report for the National Institute for Health and Clinical Excellence (NICE) on stapled hemorrhoidopexy, the authors noted that the cost-effectiveness of the staple gun was likely to dependent on the potential, in each location, to switch more patients to day case surgery [5]. Such organizational adjustments are rarely examined in economic evaluations. They can also be important in the case of drugs (e.g., a new drug that increases potential for early discharge from intensive care) [6], but are much less common.

The fifth way in which devices are different from drugs is that equivalent clinical evidence may not be available for all products, making comparisons difficult. Those undertaking economic evaluations are often quick to "generalize" their recommendations,

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"Value — neither an abstract ideal nor a code word for cost reduction — should define the framework for performance improvement in health care. Rigorous, disciplined measurement and improvement of value is the best way to drive system progress. Yet value in health care remains largely unmeasured and misunderstood"

Michael E. Porter, N Engl J Med 2010

"Companies that do attempt to match product features and capabilities more closely to their customers' perceptions of value must answer a difficult question: Who are their customers?"

McKinsey & Company, 2010

"This new game is challenging in developed and emerging markets alike. Success in emerging markets requires a deep understanding of stakeholders' needs—which is hard to get from a design office halfway around the world."

McKinsey & Company, 2010

7 Key Questions in Discussing Value: Who, What, Why, When, Where, How, How Much?

Who, What, Why, When, Where, How, How Much?

***Who** are the stakeholders?*

***What** evidence is needed to secure reimbursement and market access?*

***Why** consider identifying economic and clinical value data to justify reimbursement and market access?*

***How** well does my device work in comparison with the alternatives?*

***How much** health gain do we get for the money paid?*

***When** should device manufacturers engage with CDRH and Payers?*

Demonstrating Value of a New Medical Device

Evaluations of medical devices and the price conundrum

Source: Adapted from www.clker.com

Value Metrics: Demonstrating the Value Case

Other Value Metrics: Demonstrating the Value Case

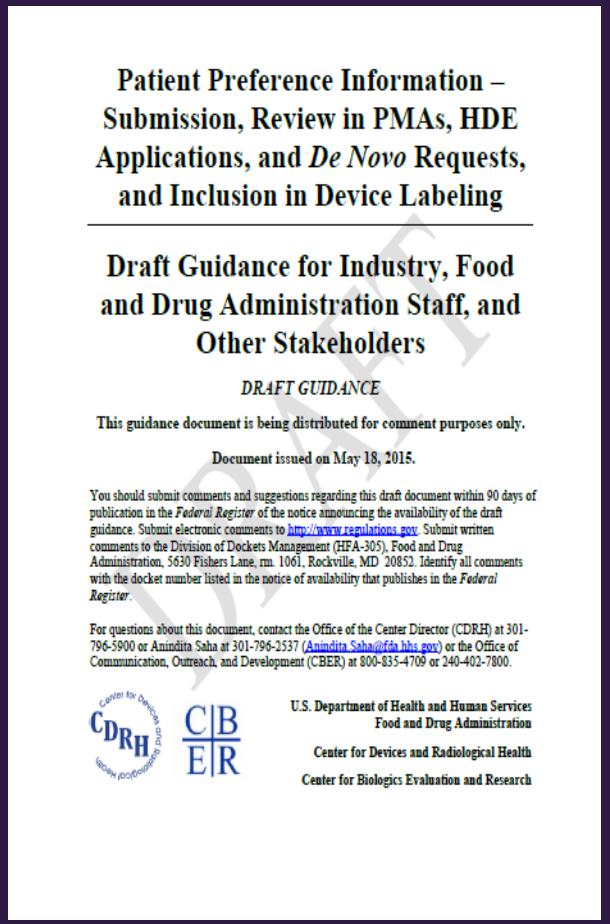
- Budget Impact Analysis (BIA)
- Cost-effectiveness analysis (CEA)
- Time and Motion Analysis (or time-motion study)

Value Metrics: PRO Examples

Value Metrics and Value Claims

CDRH

Class I, II, III Medical Device



Patient Preference Information – Submission, Review in PMAs, HDE Applications, and *De Novo* Requests, and Inclusion in Device Labeling

Draft Guidance for Industry, Food and Drug Administration Staff, and Other Stakeholders

DRAFT GUIDANCE

This guidance document is being distributed for comment purposes only.

Document issued on May 18, 2015.

You should submit comments and suggestions regarding this draft document within 90 days of publication in the *Federal Register* of the notice announcing the availability of the draft guidance. Submit electronic comments to http://www.regulations.gov. Submit written comments to the Division of Dockets Management (HFA-305), Food and Drug Administration, 5630 Fishers Lane, rm. 1061, Rockville, MD 20852. Identify all comments with the docket number listed in the notice of availability that publishes in the *Federal Register*.

For questions about this document, contact the Office of the Center Director (CDRH) at 301-796-5900 or Anindita Saha at 301-796-2537 (Anindita.Saha@fda.hhs.gov) or the Office of Communication, Outreach, and Development (CBER) at 800-835-4709 or 240-402-7800.

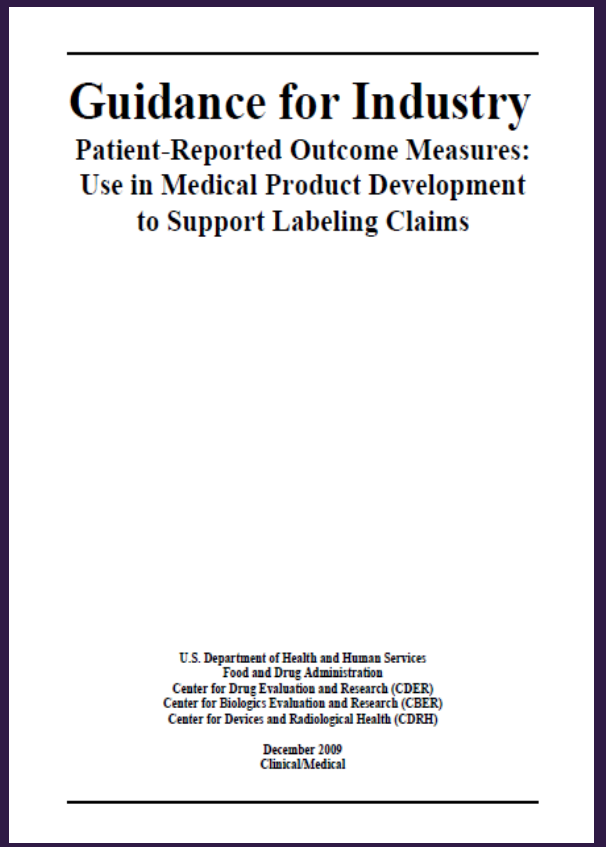
U.S. Department of Health and Human Services
Food and Drug Administration
Center for Devices and Radiological Health
Center for Biologics Evaluation and Research

DRAFT

Value Metrics and Value Claims

CDER

Drug/Device Combination



Guidance for Industry

Patient-Reported Outcome Measures: Use in Medical Product Development to Support Labeling Claims

U.S. Department of Health and Human Services
Food and Drug Administration
Center for Drug Evaluation and Research (CDER)
Center for Biologics Evaluation and Research (CBER)
Center for Devices and Radiological Health (CDRH)

December 2009
Clinical/Medical

CDRH Payer Communication Task Force: Implications for Evidence Planning and Generation

Source: www.fundable.com

CDRH Payer Communication Task Force: Implications for Evidence Planning and Generation

- Opportunity for payers to engage early with the FDA and medical device sponsors
- May shorten the time from FDA approval or clearance of a medical device to coverage
- May allow for the design of clinical trials that may produce required outcomes for both regulatory approval or clearance and coverage determinations
- Identification of the right evidence early in the development process that support the value proposition
- Assist with the development of the value strategy
- Strengthen the value proposition
- Increase differentiation in the market

Where do we go from here?

References

- DeKoven, M., et al. Got value? Determine it. Demonstrate it. Communicate it. Realise it. Journal of Commercial Biotechnology . 2008 14(4): 299-306.
- Overview of Medical Devices and Their Regulatory Pathways. http://www.fda.gov/AboutFDA/CentersOffices/OfficeofMedicalProductsandTobacco/CDRH/CDRHTransparency/ucm203018.htm
- Frequently Asked Questions About Combination Products. http://www.fda.gov/CombinationProducts/AboutCombinationProducts/ucm101496.htm
- Guidance for Industry Patient-Reported Outcome Measures: Use in Medical Product Development to Support Labeling Claims http://www.fda.gov/downloads/Drugs/.../Guidances/UCM193282.pdf
- Patient Preference Information – Submission, Review in PMAs, HDE Applications, and De Novo Requests, and Inclusion in Device Labeling. http://www.fda.gov/downloads/medicaldevices/deviceregulationandguidance/guidancedocuments/ucm446680.pdf
- Burke, LB., et al. The use of patient-reported outcome measures in the evaluation of medical products for regulatory approval. Clinical pharmacology and therapeutics. 2008 84(2): 281.
- Patrick, DL., et al. Patient-Reported Outcomes to Support Medical Product Labeling Claims: FDA Perspective. "Value in Health 2007 10(s2): S125-S137.
- Porter, ME. What is value in health care? New England Journal of Medicine 2010; 363:2477-2481.
- Paul, JE., and Trueman P. Fourth hurdle reviews', NICE, and database applications. Pharmacoepidemiology and drug safety . 2001; 10(5): 429-438.
- Payer Communication Task Force (PCTF). http://www.fda.gov/AboutFDA/CentersOffices/OfficeofMedicalProductsandTobacco/CDRH/CDRHInnovation/ucm456149.htm
- McCabe, C., et al. Market and patient access to new oncology products in Europe: a current, multidisciplinary perspective. Annals of Oncology. 2009; 20(3): 403-412.
- Value-based pricing for pharmaceuticals: Implications of the shift from volume to value. http://www.converge-health.com/sites/default/files/uploads/resources/white-papers/valuebasedpricingpharma_060412.pdf
- WHO. Health Technology Assessment of Medical Devices. http://apps.who.int/medicinedocs/documents/s21560en/s21560en.pdf
- Chilukuri S., et al. Design to value in medical devices. McKinsey & Company. 2010
- Taylor RS. and Iglesias CP. Assessing the Clinical and Cost-Effectiveness of Medical Devices and Drugs: Are They That Different?. Value in Health . 2009; 12(4): 404-406.
- Drummond M., Griffin, A. and Tarricone, R. Economic evaluation for devices and drugs—same or different?. Value in health,. 2009: 12(4): 402-404.