DEPARTMENT OF HEALTH AND HUMAN SERVICES
Food and Drug Administration

Medical Device De Novo Classification Process; Final Rule

Docket No. FDA-2018-N-0236

Final Regulatory Impact Analysis
Final Regulatory Flexibility Analysis
Unfunded Mandates Reform Act Analysis

Economics Staff
Office of Economics and Analysis
Office of Policy, Legislation, and International Affairs
Office of the Commissioner

Table of Contents

I. Introduction and Summary

A. Introduction

We have examined the impacts of the final rule under Executive Order 12866, Executive Order 13563, the Regulatory Flexibility Act (5 U.S.C. 601-612), and the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4). Executive Orders 12866 and 13563 direct us to assess all costs and benefits of available regulatory alternatives and, when regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity). We believe that this final rule is a significant regulatory action as defined by Executive Order 12866.

The Regulatory Flexibility Act requires us to analyze regulatory options that would minimize any significant impact of a rule on small entities. Because small entities affected by this final rule would incur very small one-time costs to read and understand the rule, we certify that the final rule will not have a significant economic impact on a substantial number of small entities.

The Unfunded Mandates Reform Act of 1995 (section 202(a)) requires us to prepare a written statement, which includes an assessment of anticipated costs and benefits, before proposing "any rule that includes any Federal mandate that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of $100,000,000 or more (adjusted annually for inflation) in any one year." The current threshold after adjustment for inflation is $158 million, using the most current (2020) Implicit Price Deflator for the Gross Domestic Product. This final rule would not result in an expenditure in any year that meets or exceeds this amount.

B. Summary of Costs and Benefits

The final rule will clarify the De Novo classification process for certain medical devices to obtain marketing authorization as class I or class II devices, rather than remaining automatically designated as class III devices under the Federal Food, Drug, and Cosmetic (FD&C) Act. In addition, the final rule will clarify and create a more efficient De Novo classification process by specifying: (1) what medical devices are eligible for the De Novo classification process; (2) what information manufacturers must provide in De Novo requests; and (3) how to organize this information. By clarifying and making the process more efficient, the final rule could reduce the time and costs associated with reviewing De Novo requests. Moreover, the final rule will allow us to refuse to accept inappropriate and deficient De Novo requests and require us to protect the confidentiality of certain data and information submitted with a request until we issue an order granting the request.

Industry will incur costs to read and understand this final rule. The present discounted value over 10 years ranges from $0.06 million to $1.1 million, with a primary estimate of $0.6 million at a 7 percent discount rate. The present discounted value of these costs over 10 years ranges from $0.06 million to $1.1 million, with a primary estimate of $0.6 million at a 3 percent discount rate.

Table 1 summarizes our estimate of the annualized costs and the annualized benefits of the final rule over 10 years. We estimate that the annualized costs over 10 years would range from $0.01 million to $0.17 million at a 7 percent discount rate, with a primary estimate of $0.09 million. We estimate that the annualized costs over 10 years at a 3 percent discount rate would range from $0.01 million to $0.15 million, with a primary estimate of $0.08 million.

Table 1. Summary of Benefits, Costs and Distributional Effects of the Final Rule ($ Millions)

Category		Primary Estimate	Low Estimate	High Estimate	Units			Notes
					Year Dollars	Discount Rate	Period Covered	
Benefits	Annualized Monetized $millions/year				2019	7%	10 years	
					2019	3%	10 years	
	Annualized Quantified				2019	7%	10 years	
					2019	3%	10 years	
	Qualitative							Clarification of the De Novo process for requesters. Potentially fewer incomplete submissions and faster introduction of medical devices.
Costs	Annualized Monetized $millions/year	$0.09	$0.01	$0.17	2019	7%	10 years	
		$0.08	$0.01	$0.15	2019	3%	10 years	
	Annualized Quantified				2019	7%	10 years	
					2019	3%	10 years	
	Qualitative							
Transfers	Federal Annualized Monetized $millions/year				2019	7%	10 years	
					2019	3%	10 years	
		From:			To:			
	Other Annualized Monetized $millions/year				2019	7%	10 years	
					2019	3%	10 years	
		From:			To:			

Category		Primary Estimate	Low Estimate	High Estimate	Units			Notes
					Year Dollars	Discount Rate	Period Covered	
Effects	State, Local or Tribal Government: None Small Business: A small one-time administrative burden of up to $300 on each affected small entity. Wages: None Growth: None							

C. Comments on the Preliminary RIA and Our Responses

We received several sets of comments on the proposed rule (Ref. 1) by the close of the comment period, each containing one or more comments on one or more issues. We received comments from medical device associations, industry, medical and health care professional associations, public health advocacy groups, law firms, and individuals. None of the comments referenced the preliminary regulatory impact analysis (Ref. 2) specifically, although some comments generally discussed potential burdens of the proposed rule.

(Comment 1) A comment supported facility inspection prior to granting or declining a De Novo request because the commenter states it is essential for safety in the case of novel medical devices. Several commenters wanted to remove or revise the subsection related to facility inspections because the commenters state the provision is unduly burdensome.

(Response 1) FDA disagrees with the comments to remove facility inspections and is finalizing this provision with clarifying changes. The inspection would be done only in the two circumstances specified in the regulation and described in the Preamble in Section V.E. Because we already conduct inspections related to De Novo requests under these circumstances, these inspections are part of our baseline.

(Comment 2) A few commenters state it is unnecessary and places a potentially unrealistic burden on the De Novo requester to provide a "complete" device description.

(Response 2) We disagree with these comments. We do not expect an excessively detailed description of the device, but there must be sufficient detail to describe the aspects of the device that could affect safety and effectiveness. A complete device description is necessary for us to classify a device. The word "complete" is not overly burdensome.

(Comment 3) Some comments request we eliminate the language indicating that the Agency may "test" one or more of the devices because we have traditionally relied on testing by the manufacturer. Another commenter indicated that while providing samples may be appropriate for a high-risk device likely to be reviewed in a PMA, it is unclear that samples are necessary for devices reviewed through the De Novo pathway.

(Response 3) We disagree with these comments because there are some situations in which we may need to see or test a device reviewed through the De Novo pathway to understand the device and determine if general or general and special controls are sufficient to reasonably assure safety and effectiveness of the device and device type. Commenters did not provide enough information for us to add a cost related to the requirement for samples.

D. Summary of Changes

The final rule is similar to the proposed rule. However, we are making some changes to the regulatory text in response to comments, including eliminating certain sections, changing the ordering of certain requirements, and making other edits for clarity. In addition, on our own initiative, we are renumbering the sections to make them easier for De Novo requesters and the public to use and making other clarifying and technical changes. None of these changes affect

the analysis of the costs of this rule, although we have revised this analysis to reflect updated wages. We have moved the discussion of the costs to read and understand the rule that appeared in the uncertainty section of the preliminary regulatory impact analysis to the main analysis in this document.

In the preliminary regulatory impact analysis, we included a discussion of the potential benefits of this rule from reducing the number of unnecessary premarket notifications (510(k)s) that we receive prior to receiving a De Novo request. We have no data to suggest that we are still receiving unnecessary 510(k)s; therefore, we do not consider any potential cost-savings to industry or us from fewer unnecessary 510(k) submissions. We have removed that discussion from this analysis.

II. Final Regulatory Impact Analysis

A. Background

The Food and Drug Administration Modernization Act of 1997 (FDAMA) provided FDA with the authority for the De Novo classification process. The Food and Drug Administration Safety and Innovation Act of 2012 (FDASIA) modified the De Novo classification process to remove the requirement that manufacturers provide evidence that their device was not substantially equivalent (NSE) to a predicate device. Prior to FDASIA, manufacturers would submit a 510(k) to us to receive a determination that their device was NSE, and then submit a De Novo request. FDASIA eliminated the need for manufacturers to submit a 510(k) before submitting a De Novo request. When no legally marketed device upon which to base a determination of substantial equivalence exists, manufacturers can submit a De Novo request without first receiving an NSE determination on a 510(k). In 2016, the 21st Century Cures Act

further modified the De Novo classification process to remove the 30-day requirement to submit a De Novo request when a medical device manufacturer receives an NSE determination.

The De Novo classification process was meant to reduce the costs of marketing certain "novel" medical devices statutorily classified into class III, even though the medical devices may meet the statutory definition of a class I or class II device. On October 30, 2017, FDA issued a final guidance to provide recommendations on the process for the submission and review of a De Novo request. The guidance provides recommendations for interactions with FDA related to the De Novo classification process, including what information to submit when seeking a path to market via the De Novo classification process. Although we expect this guidance would help the medical device industry better understand the De Novo classification process, our program experience suggests that we need a regulation to refuse deficient De Novo requests and to provide additional assurance to requesters of the confidentiality of the data and other information in a De Novo request. The final rule will encourage device manufacturers to use the De Novo classification pathway as intended by statute.

B. Market Failure Requiring Federal Regulatory Action

FDAMA gave us the authority to classify certain novel devices under the De Novo classification process. FDASIA removed the requirement that device manufacturers first obtain an NSE determination for a novel device to submit a De Novo request. In 2016, the 21st Century Cures Act further modified the De Novo classification process to remove the 30-day requirement to submit a De Novo request when a medical device manufacturer receives an NSE determination. Although we have issued guidance to industry about our current interpretation of statutes related to the De Novo classification process, we created an institutional failure by not

issuing rulemaking to provide sufficient information to industry about the requirements for the De Novo classification process. The market cannot self-correct without us issuing a final rule.

The final rule will provide the medical device industry with sufficient information about the regulatory requirements of the De Novo classification process for certain novel devices and would provide FDA with the authority to refuse deficient De Novo requests, creating an incentive to comply with the requirements of the process. The final rule also explicitly protects the confidentiality of the data and other information prior to granting the De Novo request, which creates greater assurance that submitting data and other information would not prematurely jeopardize any market advantage. Not understanding the De Novo classification process, or perhaps not trusting the process to protect their data and other information, might lead some in the industry not to use the De Novo process.

C. Baseline Conditions

We have been receiving De Novo submissions for many years. Therefore, we use the state of the world without this rule, where we would continue to receive De Novo submissions, as our baseline. We received 339 De Novo submissions from fiscal year 2016 to fiscal year 2020, with an average of around 68 De Novo submissions each year.

D. Benefits of the Rule

The final rule will more fully describe the data and other information required for De Novo requests, which should result in higher quality requests. The final rule will also allow us to refuse to accept inappropriate or deficient De Novo requests. Thus, the rule would reduce the time that we spend reviewing and responding to requests. Reducing the review times and providing clarification regarding the content of a De Novo request should encourage

manufacturers to introduce their novel devices into the marketplace sooner, which should increase their profitability and consumer satisfaction, and promote the introduction of more medical devices. As more devices obtain marketing authorization via the De Novo classification process, we anticipate that medical device variety would increase, and over time, incrementally lower health costs.

1. Fewer Incomplete or Poor-Quality De Novo Request Submissions

The final rule will generate benefits by reducing the effort medical device manufacturers spend preparing De Novo requests, and the time we spend reviewing and processing such requests. Below we describe qualitatively these potential benefits.

a. Better Quality De Novo Requests

The final rule will provide the medical device industry with more complete and more detailed instructions about the De Novo classification process. We expect that better information would also reduce the time that our scientists spend reviewing De Novo requests because most requests would contain all the necessary materials for us to start a formal review, including only required data from sources that meet our standards. However, we lack sufficient data to estimate how industry will respond to the final rule.

b. Fewer Incomplete De Novo Requests

We expect the final rule will reduce the number of incomplete De Novo requests because we would have the authority to refuse to accept requests that do not include all elements needed for FDA to begin its substantive review. Our experience shows that the two most common

reasons for incomplete De Novo requests are missing materials and materials that do not support a request. For De Novo requests with missing materials, we must spend time to communicate what materials should have been included in the request. For De Novo requests containing unnecessary information, we would spend more time than needed to review and then re-review materials provided to support the requests. However, we lack data to quantify these potential benefits.

2. Faster Introduction of Medical Devices and Increased Medical Device Variety

By more fully specifying the requirements for De Novo requests, we expect industry to more quickly introduce their novel medical devices to the U.S. market. With clearer regulatory requirements, we anticipate that industry will benefit from the profit from the additional time their products are commercially available. We also expect consumers will benefit because the products will potentially reach the U.S. market sooner. Reduced time and cost from shorter reviews should also encourage more device manufacturers to use the De Novo classification process, which could lead to a greater variety of medical device for U.S. consumers over time. Economists call these benefits to producers and consumers, producer surplus and consumer surplus. The social cost of the regulatory burden includes the losses associated with products not being marketed or being marketed with a delay.

Although the economic theory is clear, we lack data for the number of individuals that use the medical devices brought to market under the De Novo classification pathway, the willingness of consumers to pay for faster introduction of novel medical devices, and other data to help us measure the gains from the faster introduction of these devices might generate. Recent

research indicates there is an increasing demand for medical device variety that would enable patients to choose the treatments that best suit their tastes and preferences (Ref. 3). Although consumers would likely be willing to pay for their additional satisfaction from greater variety, we are not able to identify any studies estimating the willingness of consumers to pay for increased medical device variety.

With fewer submission errors and more complete data there will be lower costs to introduce novel devices to the U.S. market using the De Novo classification process, and we expect to see an increase in medical device product variety. More product variety should improve the ability of consumers to choose a treatment option that better addresses their health condition, which we anticipate will also improve their consumer satisfaction.

E. Costs of the Rule

Reading and understanding the rule

We anticipate that medical device manufacturers that are likely to use the De Novo classification process will incur costs to learn about the requirements of the rule. In 2017, about 17,000 domestic and foreign medical device manufacturers had registered with us. However, we anticipate that most manufacturers will learn about the rule from trade organizations and from our public communications. Some firms may choose to read the entire rule to fully understand the changes to the De Novo classification process. To estimate the time to read and understand the rule, Department of Health and Human Services (HHS) guidance (Ref. 4) recommends using reading speeds of 200 words per minute to 250 words per minute. The final rule has approximately 26,000 words. We estimate the time to learn about the requirements for manufacturers that are likely to utilize the De Novo classification process would be between 1.73

hours (= 26,000 words / 250 words per minute / 60 minutes per hour) and 2.17 hours (= 26,000 words / 200 words per minute / 60 minutes per hour).

To estimate the cost of a manager's time to read the rule, we use data on the median hourly wage for a General and Operations Manager (occupation code 11-1021) in medical equipment and supplies manufacturing (North American Industry Classification System code 339100). According to the Bureau of Labor Statistics' National Occupational Employment and Wage Estimates for 2019, the median wage for this occupation equals $61.98 per hour (Ref. 5). To account for benefits and overhead, we double this value to $123.96 per hour (= $61.98 x 2). Thus, for affected medical device manufacturers who would likely submit a De Novo request, the per firm one-time cost to read and understand the rule ranges from $215 to $269.

To estimate the number of firms that might read the entire rule, we assume that every future request comes from a different device manufacturer and that these manufacturers would learn about the requirements at the time the rule publishes. Based on our experience with previous submissions of De Novo requests, we assume that we might receive around 300 De Novo requests from 300 unique firms over a 5-year period. We estimate that firms would incur a one-time cost to learn about the rule between $64,459 (= 300 manufacturers x 1.73 hours per manufacturer x $123.96 per hour) and $80,574 (= 300 manufacturers x 2.17 hours per manufacturer x $123.96 per hour), with a primary estimate of $71,621 (= 300 manufacturers x 1.93 hours per manufacturer x $123.96 per hour). To capture the costs for device manufacturers that are less likely to use the De Novo classification process, we assume each registered firm would spend between 0 and 0.5 hours per manufacturer to understand the general requirements of the rule. The one-time cost per firm would range from $0 to $61.98. The total one-time cost for these manufacturers would range from $0 to $1,053,660 (= 17,000 manufacturers per year x

0.5 hour x $123.96 per hour), with a primary estimate of $526,830 (= 17,000 manufacturers per year x 0.25 hour x $123.96 per hour). We estimate the total one-time cost for industry to learn about the rule would range between $64,459 (= $64,459 + $0) and $1,134,234 (= $80,574 + $1,053,660), with a primary estimate of $598,451 (= $71,621 + $526,830).

F. Summary of the Impacts of the Rule

The final rule will more clearly specify the requirements for De Novo requests, which would reduce the likelihood that medical device manufacturers submit De Novo requests that are costlier than necessary and reduce our current review times for De Novo requests. In Table 3, we present our estimates of the quantified impacts of the rule. Over 10 years, the present value of the costs range from $0.06 million to $1.1 million at a 7% discount rate, and from $0.06 million to $1.1 million at a 3 percent discount rate. Our primary estimate of the present value of the costs equals $0.6 million at both a 7 percent and 3 percent discount rate. The costs of the rule are the same as the net costs because we have not quantified any cost-savings. Table 2 summarizes the present value of costs and benefits, and Table 3 summarizes the annualized value of costs and benefits of the final rule.

Table 2. Summary of Present Value Costs and Benefits of the Final Rule ($ 2019 million over 10 years)

	Primary (7%)	Low (7%)	High (7%)	Primary (3%)	Low (3%)	High (3%)
Costs	$0.60	$0.06	$1.13	$0.60	$0.06	$1.13
Cost Savings	not quantified	not quantified	not quantified	not quantified	not quantified	not quantified
Net Costs	$0.60	$0.06	$1.13	$0.60	$0.06	$1.13

Table 3. Summary of Annualized Costs and Benefits of the Final Rule ($ 2019 million over 10 years)

	Primary (7%)	Low (7%)	High (7%)	Primary (3%)	Low (3%)	High (3%)
Costs	$0.09	$0.01	$0.17	$0.08	$0.01	$0.15
Cost Savings	not quantified	not quantified	not quantified	not quantified	not quantified	not quantified
Net Costs	$0.09	$0.01	$0.17	$0.08	$0.01	$0.15

G. International Effects

The requirements of the final rule are the same, whether the De Novo requester is a domestic firm or a foreign firm. We do not have enough information to estimate the number of foreign firms that would submit De Novo requests.

H. Uncertainty and Sensitivity Analysis

We lack direct evidence about how the medical device industry will respond to a more transparent and predictable De Novo classification process. However, a rational, self-interested manufacturer of a medical device that is eligible for the De Novo classification pathway would utilize the De Novo classification process more frequently if the De Novo classification process has lower costs than an alternative process. We recognize that there is considerable uncertainty about how much a more predictable De Novo classification process will lower costs or how much more frequently manufacturers will use the De Novo classification process. Over time as the industry gains experience with the revised requirements, we expect more better quality submissions. In addition, we are uncertain about the amount of time we will save reviewing higher quality requests.

I. Analysis of Regulatory Alternatives to the Rule

In this section, we consider extending the effective date of the final rule. The current effective date is 90 days after the rule publishes. If we extend the effective date to one year, we would delay some costs for industry to read the rule. This delay would reduce the costs of this final rule.

III. Final Small Entity Analysis

The Regulatory Flexibility Act requires Agencies to analyze regulatory options that would minimize any significant impact of a rule on small entities. This analysis, as well as other sections in this document, serves as the Final Regulatory Flexibility Analysis, as required under the Regulatory Flexibility Act.

We use the North American Industry Classification System (NAICS) codes used by the International Trade Administration in their 2016 Medical Devices Report (Ref. 6) to represent the medical device industry.[1] The U.S. Small Business Administration defines small businesses in these industries as ranging between 750 and 1,250 employees.[2] We use detailed data by firm size from the Statistics of U.S. Businesses in 2012 to estimate the proportion of firms that are

[1] Industries include: NAICS 325413, In-Vitro Diagnostics Substances Manufacturing; NAICS 334510, Electromedical and Electrotherapeutic Apparatus Manufacturing; NAICS 334517, Irradiation Apparatus Manufacturing; NAICS 339112, Surgical and Medical Instrument Manufacturing; NAICS 339113, Surgical Appliances and Supplies Manufacturing; NAICS 339114, Dental Equipment and Supplies Manufacturing; and NAICS 339115, Ophthalmic Goods Manufacturing.

[2] U.S. Small Business Administration, Table of Size Standards: https://www.sba.gov/document/support--table-size-standards.

small and the revenue per firm.[3] For industries with a small business cutoff of 1,250 employees, we estimate the number of firms by assuming half of the firms in the 1,000 to 1,499 employee category would have under 1,250 employees. We estimate that between 89% and 99% of firms in these NAICS codes are small. We estimate that the minimum revenue per firm is around $325,000 for firms with 0 to 4 employees in the NAICS 339114 category.

This final rule will impose a small administrative burden of up to $300 per year on each affected small entity. This cost is less than 0.1% of the smallest annual per-firm revenue in this industry. Because small entities affected by this final rule will incur very small one-time costs to read and understand the rule, we certify that the final rule will not have a significant economic impact on a substantial number of small entities.

IV. References

The following references marked with an asterisk (*) are on display at the Dockets Management Staff (HFA-305), Food and Drug Administration, 5630 Fishers Lane, Rm. 1061, Rockville, MD 20852, 240-402-7500 and are available for viewing by interested persons between 9 a.m. and 4 p.m., Monday through Friday; they also are available electronically at https://www.regulations.gov. References without asterisks are not on public display at https://www.regulations.gov because they have copyright restriction. Some may be available at the website address, if listed. References without asterisks are available for viewing only at the

[3] The 2012 Statistics of U.S. Businesses has detailed information by entity size, including for entities with greater than 500 employees. https://www.census.gov/programs-surveys/susb/data/datasets.2012.html

Dockets Management Staff. FDA has verified the website addresses, as of the date this document publishes in the *Federal Register*, but websites are subject to change over time.

1. *83 FR 63127-63146. Medical Device De Novo Classification Process: Proposed Rule. December 17, 2018. https://www.federalregister.gov/documents/2018/12/07/2018-26378/medical-device-de-novo-classification-process

2. *Preliminary Regulatory Impact Analysis. Medical Device De Novo Classification Process. https://www.fda.gov/media/122986/download

3. Ross, Jeffrey, and Ginsburg, Geoffrey. 2003. "The Integration of Molecular Diagnostics with Therapeutics: Implications for Drug Development and Pathology Practice." American Journal of Clinical Pathology 119: 26-36.

4. *Guidelines for Regulatory Impact Analysis, HHS September 2014, Revised Draft with May 2015 Update

5. *Bureau of Labor Statistics. National Occupational Employment and Wage Estimates. Occupational Employment Statistics, General and Operations Manager (North American Industry Classification, NAICS, code 339100) May 2019. https://www.bls.gov/oes/current/naics4_339100.htm, accessed February 4, 2021.

6. *U.S. Department of Commerce, International Trade Administration, Industry & Analysis. (May 2016). 2016 Top Markets Report Medical Devices: A Market Assessment Tool for U.S. Exporters.