



**FDA** U.S. FOOD & DRUG  
ADMINISTRATION

# **FY 2016**

## ***PERFORMANCE REPORT TO CONGRESS***

*for the*

### ***Prescription Drug User Fee Act***



## ***Acting Commissioner's Report***

---

I am pleased to present to Congress the Food and Drug Administration's (FDA or the Agency) Fiscal Year (FY) 2016 Prescription Drug User Fee Act (PDUFA) Performance Report. This report marks the 24th year of PDUFA and the 4th year of PDUFA V (FY 2013 through FY 2017).

This report presents updated data on FDA's progress in meeting FY 2015 performance goals, preliminary data on meeting FY 2016 review performance goals, and other commitments under PDUFA V as of September 30, 2016.

One of the key programs under PDUFA V has been the Enhanced Review Transparency and Communication for NME NDAs and Original BLAs (the Program). As of September 30, 2016, FDA has received 218 applications through this Program since its inception, which involves more communication and transparency between the applicant and FDA review team during review of the marketing application. The FY 2015 Program cohort is nearly closed, with 95 percent of applications acted on within the goal date, and one additional application pending within goal. The FY 2016 Program cohort has received 43 applications to date. While most of these applications are still under review and within their PDUFA goal date, those applications that received a first cycle action by September 30, 2016, all were acted on within the goal date. FDA will continue to focus on these highly innovative products that represent important new medicines for the American people.

We are committed to meeting all PDUFA performance goals related to human drug review. In FY 2016, the Agency engaged in sustained efforts to recruit and hire new talent for the human drug review program to better enable FDA to meet increasing demands on the program, particularly in the area of meeting management goals. Moving forward into FY 2017, FDA will continue to enhance the program's staffing in addition to strengthening our efforts to improve program performance while maintaining a focus on ensuring that safe, effective, and high-quality new drugs and biologics are reviewed in an efficient and predictable time frame.

Stephen M. Ostroff, M.D.  
Acting Commissioner of Food and Drugs

## ***Acronyms***

**BLA** – Biologics License Application

**CBER** – Center for Biologics Evaluation and Research

**CDER** – Center for Drug Evaluation and Research

**ECT** – Enhanced Communication Team

**ETASU** – Elements to Assure Safe Use

**FAERS** – FDA Adverse Event Reporting System

**FDA** – Food and Drug Administration

**FDASIA** – Food and Drug Administration Safety and Innovation Act

**FY** – Fiscal Year (October 1 to September 30)

**ICH** – International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use

**IND** – Investigational New Drug

**NDA** – New Drug Application

**NIH** – National Institutes of Health

**NME** – New Molecular Entity

**OND** – Office of New Drugs

**OPQ** – Office of Pharmaceutical Quality

**OSE** – Office of Safety and Epidemiology

**PDUFA** – Prescription Drug User Fee Act

**PEPFAR** – President's Emergency Plan for AIDS Relief

**PFDD** – Patient-Focused Drug Development

**PMC** – Postmarketing Commitment

**PMR** – Postmarketing Requirement

**PRISM** – Post-licensure Rapid Immunization Safety Monitoring

**REMS** – Risk Evaluation and Mitigation Strategy

**VAERS** – Vaccine Adverse Event Reporting System

## ***Executive Summary***

---

PDUFA was enacted in 1992 and authorized FDA to collect user fees from pharmaceutical and biotechnology companies for the review of certain human drug and biological products. In return, FDA commits to certain review performance goals, procedural and processing goals, and other commitments which are part of the Agency's agreement with the regulated industry.

PDUFA must be reauthorized by Congress every 5 years. The fifth and most recent authorization (known as PDUFA V) occurred on July 9, 2012, when the President signed into law the Food and Drug Administration Safety and Innovation Act (FDASIA). As directed by Congress in the Food and Drug Administration Amendments Act of 2007 (FDAAA), FDA developed proposed enhancements for PDUFA V in consultation with drug industry representatives, patient and consumer advocates, health care professionals, and other public stakeholders. These discussions led to the current set of performance goals for the FY 2013-2017 period, detailed in a document commonly known as the PDUFA Commitment Letter.<sup>1</sup>

This report summarizes FDA's performance in meeting PDUFA goals and commitments for FY 2015 and FY 2016, the third and fourth years under PDUFA V. Specifically, it updates performance data for submissions received in FY 2015 (initially reported in the FY 2015 PDUFA Performance Report) and presents preliminary data on FDA's progress in meeting FY 2016 goals. Updates on FDA's accomplishments related to additional PDUFA V commitments for FY 2016 and historical review trend data are also included. Details of FY 2015 and FY 2016 performance, review cycle data on all original new drug applications (NDAs) and biologics license applications (BLAs) approved during FY 2016, the number and characteristics of applications filed by review division, and definitions of key terms used in this report are presented in the appendices. Descriptions of the various submission types are included on page 4.

### **Achievements in FY 2016**

Among the changes made under PDUFA V, FDA established a modified review program (the Program) for new molecular entity (NME) NDAs and original BLAs received from October 1, 2012, through September 30, 2017. The goals of the Program are to increase the efficiency and effectiveness of the first review cycle and decrease the number of review cycles necessary for approval by providing (1) new opportunities for communication between applicants and the FDA review team during the Agency's review of the application and (2) additional review time for FDA and applicants to address review activities that occur late in the review cycle for these highly complex applications. In FY 2015, 62 applications were received through the Program. As of September 30, 2016, 95 percent (59 of 62) of these applications were acted on within goal and 1 additional application is pending within goal, so the highest possible performance for the FY 2015 cohort is 97 percent. During FY 2016, 43 applications were received and will be reviewed under the Program. As of September 30, 2016, 5 of these applications had been reviewed and acted on, and all of the reviews were completed on time. The remaining 38

---

<sup>1</sup> [www.fda.gov/downloads/ForIndustry/UserFees/PrescriptionDrugUserFee/UCM270412.pdf](http://www.fda.gov/downloads/ForIndustry/UserFees/PrescriptionDrugUserFee/UCM270412.pdf)

applications are pending within their PDUFA goal dates. Additional quality metrics related to the Program and an update on the independent assessment of the Program are included in this report.

The estimated<sup>2</sup> median approval times for priority and standard NDA and BLA applications received in FY 2015 increased very slightly compared to estimated median approval times in FY 2014. The preliminary data show that the percentage of priority and standard applications filed in FY 2015 and approved during the first review cycle were 85 percent and 65 percent, respectively.

## **Review Performance**

The FY 2015 cohort had a workload of 2,772 review actions. FDA met or exceeded the 90 percent performance level for 10 of 11 review performance goals. One goal category is excluded from FY 2015 review performance because FDA did not receive any applications for Class I resubmitted efficacy supplements in FY 2015.

As of September 30, 2016, FDA had completed 1,492 review actions for the FY 2016 cohort. FDA is currently meeting or exceeding 8 of 12 review performance goals for FY 2016. With 1,182 submissions currently under review and still within the PDUFA goal date, FDA has the potential to meet or exceed 11 of 12 review performance goals for FY 2016.

## **Procedural and Processing Performance**

FDA's workload for activities related to procedural and processing goals and commitments (i.e., meeting management, procedural responses, and procedural notifications) for the FY 2015 cohort totaled 8,731. FDA met or exceeded the 90 percent performance level for 11 of 18 procedural and processing goals, while the remaining 7 goals were met with 60 percent or higher on-time performance.

FDA is currently meeting or exceeding 11 of 18 procedural and processing goals for the FY 2016 cohort. With 1,121 submissions currently under review and still within the PDUFA goal date, FDA has the potential to meet or exceed 11 of 18 procedural and processing goals for FY 2016, with 3 additional goals that could exceed 86 percent on-time performance. All 18 goals have the potential to exceed 70 percent on-time performance.

## **Additional PDUFA V Commitments**

During FY 2016, FDA made significant progress implementing other important PDUFA V commitments, including enhancing regulatory science and expediting drug development, enhancing benefit-risk assessment in regulatory decision making, enhancing and modernizing the FDA drug safety system, and improving the efficiency of human drug review through

---

<sup>2</sup> Median approval time is estimated because an application can receive an approval after multiple review cycles, thus impacting median approval time for all applications in a given receipt cohort. Some applications may be approved years after their original receipt.

required electronic submissions and standardization of electronic drug application data. These achievements, as well as information about FDA's information technology accomplishments and hiring commitment progress, are included in this report.

*(This page left blank intentionally.)*



# Table of Contents

<b>Introduction.....</b>	<b>1</b>
Information Presented in This Report.....	1
<b>PDUFA Review Goals .....</b>	<b>5</b>
Review Workload: FY 2011 to FY 2016.....	5
Final FY 2015 Review Performance.....	6
Preliminary FY 2016 Review Performance.....	7
<b>PDUFA Procedural and Processing Goals and Commitments.....</b>	<b>8</b>
Procedural and Processing Workload: FY 2011 to FY 2016.....	8
Final FY 2015 Procedural and Processing Performance .....	9
Preliminary FY 2016 Procedural and Processing Performance .....	10
Meeting Planned Review Timeline Target Dates.....	11
<b>PDUFA Trend Graphs .....</b>	<b>12</b>
<b>Additional PDUFA V Commitments .....</b>	<b>14</b>
Section IX: Enhancing Regulatory Science and Expediting Drug Development.....	15
Section X. Enhancing Benefit-Risk Assessment in Regulatory Decision-Making.....	18
Section XI. Enhancement and Modernization of the FDA Drug Safety System.....	20
Section XII. Improving the Efficiency of Human Drug Review through Required Electronic Submissions and Standardization of Electronic Drug Application Data .....	23
Section XIV. Information Technology Goals .....	25
FY 2016 Hiring and Placement of New PDUFA V Staff at FDA .....	26
Additional PDUFA V Review Program Reporting.....	27
<b>Appendices .....</b>	<b>A-1</b>
Appendix A: Final FY 2015 Cohort Performance Detail.....	B-1
Appendix B: Preliminary FY 2016 Cohort Performance Detail.....	C-1
Appendix C: List of Approved Applications .....	D-1
Appendix D: Filed Application Numbers by Review Division.....	E-1
Appendix E: FY 2015-2016 Regulatory Science Progress Report Executive Summary.....	F-1
Appendix F: Definitions of Key Terms .....	G-1

*(This page left blank intentionally.)*

## ***Introduction***

---

On July 9, 2012, the President signed FDASIA into law, which included the reauthorization of PDUFA for FY 2013 through FY 2017, known as PDUFA V. PDUFA V continues to provide FDA with a consistent source of funding to help maintain a predictable and efficient review process for human drugs and biologics. In return for additional resources, FDA agreed to certain review performance goals, such as reviewing and acting on NDA and BLA submissions within predictable timeframes.

Since the implementation of PDUFA I in 1992, FDA has used PDUFA resources to significantly reduce the time it takes to evaluate new drugs and biologics without compromising its rigorous standards for demonstration of safety, efficacy, and quality of new drugs and biologics before approval. The efficiency gains under PDUFA have revolutionized the drug review process in the United States and enabled FDA to ensure more timely access to innovative and important new therapies for patients.

More information on the history of PDUFA is available on the FDA website.<sup>3</sup>

### **Information Presented in This Report**

This report presents PDUFA performance and workload information for two different types of goals: (1) review of applications and other submissions pertaining to human drugs and biologics and (2) meeting management and other procedural goals related to responses and notifications in the human drug review process. PDUFA workload information for these goals is included in the tables that follow. Significant components of PDUFA workload that are not captured by PDUFA goals and therefore not presented in this report include review of investigational new drug (IND) applications, labeling supplements, annual reports, and the ongoing monitoring of drug safety in the postmarket setting.

PDUFA performance information related to achieving the two types of goals includes reviews of submissions pending from the previous fiscal year as well as reviews of submissions received during the current fiscal year. This report presents final performance for the FY 2015 cohort of submissions based on actions completed in FY 2015 and FY 2016. In addition, it includes preliminary performance for the FY 2016 cohort of submissions that had actions completed or due for completion in FY 2016. Final performance for the FY 2016 cohort will be presented in the FY 2017 PDUFA Performance Report and will include actions for submissions still pending within the PDUFA goal date as of September 30, 2016.

Among other changes made under PDUFA V, FDA established the Program for NME NDAs and original BLAs received from October 1, 2012, through September 30, 2017. The goals of the Program are to increase the efficiency and effectiveness of the first review cycle and decrease the number of review cycles necessary for approval by providing (1) new opportunities for communication between applicants and the FDA review team during FDA's review of the

---

<sup>3</sup>[www.fda.gov/AboutFDA/ReportsManualsForms/Reports/UserFeeReports/PerformanceReports/ucm2007449.htm](http://www.fda.gov/AboutFDA/ReportsManualsForms/Reports/UserFeeReports/PerformanceReports/ucm2007449.htm)

application and (2) additional review time for FDA and applicants to address review activities that occur late in the review cycle for these highly complex applications. More information on FDA's achievements related to other PDUFA V commitments can be found later in this report.

The following information refers to FDA performance presented in this report.

- The following terminology is used throughout this document:
  - *Application* means a new, original application.
  - *Supplement* means a supplement to an approved application.
  - *Resubmission* means a resubmitted application or supplement in response to a complete response, approvable, not approvable, or tentative approval letter
  - *NME* refers only to NMEs that are NDAs (not BLAs).
  - *Submission* applies to all of the above.
  - *Review Action* refers to an FDA decision on any of the above, including an approval, a tentative approval, a complete response, or withdrawal of the submission by the sponsor.
- Under PDUFA V, the preliminary counts of NMEs in workload tables for the current fiscal year may not be discrete filed NMEs. FDA often receives multiple submissions for the same NME (e.g., different dosage forms). All are initially designated as NMEs, and once FDA approves the first of the multiple submissions, the others will be designated as non-NMEs and workload numbers will be appropriately updated in later years.
- The IND data presented in this report do not include biosimilar INDs. These data are presented in the annual Biosimilars User Fee Act (BsUFA) Performance Reports located on the FDA website.<sup>4</sup>
- FDA only files applications that are sufficiently complete to permit a substantive review. The Agency makes a filing decision within 60 days of an original application's receipt. FDA's review of an application begins once the application is received. For NME NDAs and original BLAs reviewed under the Program (see the PDUFA V Commitment Letter<sup>5</sup> for more information), the PDUFA clock begins after the conclusion of the 60-day filing period. For all other submissions, the PDUFA clock begins upon FDA's receipt of the application.
- FDA reports PDUFA performance data annually for each fiscal year receipt cohort (defined as submissions filed from October 1 to September 30 of the following year). In each fiscal year, FDA receives submissions that will have associated goals due in the following fiscal year. In these cases, FDA's performance will be reported in subsequent fiscal years, either after the Agency takes an action or when the goal becomes overdue, whichever comes first.

---

<sup>4</sup> [www.fda.gov/AboutFDA/ReportsManualsForms/Reports/UserFeeReports/PerformanceReports/ucm2007449.htm](http://www.fda.gov/AboutFDA/ReportsManualsForms/Reports/UserFeeReports/PerformanceReports/ucm2007449.htm)

<sup>5</sup> [www.fda.gov/downloads/ForIndustry/UserFees/PrescriptionDrugUserFee/UCM270412.pdf](http://www.fda.gov/downloads/ForIndustry/UserFees/PrescriptionDrugUserFee/UCM270412.pdf)

- Submission types (e.g., responses to clinical holds) with shorter (e.g., 30 day) review-time goals tend to have a larger percentage of reviews completed by the end of the fiscal year, and their preliminary performance is a more reliable indicator of their final performance. However, submission types (e.g., standard efficacy supplement submissions) with longer (e.g., 10 month) review-time goals tend to have a smaller percentage of reviews completed, and their preliminary performance is a less reliable indicator of their final performance.
- Final performance for FY 2015 submissions is shown as the percentage of submissions that were reviewed within the specified goal timeline. Submission types with 90 percent or more submissions reviewed by the goal date are shown as having met the goal.
- Preliminary performance for FY 2016 submissions is shown as the percentage of submissions reviewed on time as of September 30, 2016, excluding actions pending within the PDUFA goal date. Submission types with 90 percent or more submissions reviewed by the goal date are shown as currently meeting the goal. The highest possible percent of reviews that may be completed on time (highest possible performance) if all non-overdue pending reviews are completed within goal is also shown.
- FY 2016 workload and performance figures include applications that are identified as *undesignated*, which means they are still within the 60-day filing date and have not yet had a review designation, standard or priority, made.
- For resubmitted applications, the applicable performance goal is determined by the fiscal year in which the resubmission is received, rather than the year in which the original application was submitted.
- Unless otherwise noted, all performance data are as of September 30, 2016.
- Definitions of key terms used throughout this report can be found in Appendix F.

### Submission Types Included in This Report

- **NDA** – When the sponsor of a new drug believes that enough evidence on the drug's safety and effectiveness has been obtained to meet FDA's requirements for marketing approval, the sponsor submits to FDA a new drug application. The application must contain data from specific technical viewpoints for review, including chemistry, pharmacology, medical, biopharmaceutics, and statistics. If the NDA is approved, the product may be marketed in the United States.
- **NME** – A NME is a drug for which the active ingredient has never before been approved or marketed in the United States in any form.
- **BLA** – A BLA is a submission that contains specific information on the manufacturing processes, chemistry, pharmacology, clinical pharmacology, and the clinical effects of a biologic product. If the information provided meets FDA requirements, the application is approved and a license is issued allowing the firm to market the product.
- **Resubmission** – A resubmitted original application or supplement is a complete response to an FDA action letter that addresses all identified deficiencies.
- **Supplement** – A supplement is an application to allow a company to make changes in a product that already has an approved NDA or to seek FDA approval for new uses of an approved drug. Center for Drug Evaluation and Research (CDER) must approve all major NDA changes (in packaging or ingredients, for instance) to ensure the conditions originally set for the product are still met.
- **Source:** [www.fda.gov/Drugs/InformationOnDrugs/ucm079436.htm](http://www.fda.gov/Drugs/InformationOnDrugs/ucm079436.htm)

## ***PDUFA Review Goals***

---

### **Review Workload: FY 2011 to FY 2016**

In the table below, preliminary workload numbers from FY 2016 are compared to the previous 5-year averages for original NDAs and BLAs, resubmissions, and supplements. FDA's resubmission workload continued the downward trend observed in recent years, due in large part to increases in the first cycle approval rates observed at the end of PDUFA IV and throughout PDUFA V. Other submission types, notably Original Priority NMEs and BLAs and Priority NDA and BLA Efficacy Supplements, showed increased workloads.

Workload for original applications (priority and standard) will appear different from workload reported in reports prior to FY 2013 due to different reporting requirements under PDUFA V. Definitions of Class 1 and Class 2 resubmissions and other terms are found in Appendix F. The data presented in this section represent receipts by FDA of the submission types listed in the table.

#### **Workload for Applications and Submissions**

<b>Submission Type</b>	<b>FY 11</b>	<b>FY 12</b>	<b>FY 13</b>	<b>FY 14</b>	<b>FY 15*</b>	<b>FY 16</b>	<b>FY 11 to FY 15 5-Year Average</b>	<b>FY 16 Compared to 5-Year Average</b>
Original Priority NMEs and BLAs	14	18	19	28	25	25 <sup>†</sup>	21	+19%
Original Standard NMEs and BLAs	23	32	35	21	32	26	29	-10%
Original Priority non-NME NDAs	8	8	8	10	9	10 <sup>†</sup>	9	+11%
Original Standard non-NME NDAs	56	72	76	72	84	71	72	-1%
Class 1 Resubmitted NDAs and BLAs	9	6	11	7	7	5	8	-38%
Class 2 Resubmitted NDAs and BLAs	53	36	38	35	37	32	40	-20%
Priority NDA and BLA Efficacy Supplements	23	39	29	40	52	60 <sup>‡</sup>	37	+62%
Standard NDA and BLA Efficacy Supplements	118	108	123	165	136	135	130	+4%
Class 1 Resubmitted NDA and BLA Efficacy Supplements	13	4	2	7	0	3	5	-40%
Class 2 Resubmitted NDA and BLA Efficacy Supplements	24	19	10	10	11	11	15	-27%
NDA and BLA Manufacturing Supplements requiring prior approval	809	872	873	776	765	823	819	0%

NDA and BLA Manufacturing Supplements not requiring prior approval	1,771	1,566	1,542	1,392	1,614	1,473	1,577	-7%
--	-------	-------	-------	-------	-------	-------	-------	-----

\* FY 2015 numbers were changed to reflect updates to data presented in the FY 2015 PDUFA Performance Report.

† FY 2016 numbers are preliminary. Two NME NDAs are included in the 'priority' rows above have an undesignated review priority as of September 30, 2016, and will be updated in the FY 2017 PDUFA Performance Report.

‡ FY 2016 numbers are preliminary. Caution should be exercised in interpreting these data since fifteen efficacy supplements included in the 'priority' row above have an undesignated review priority as of September 30, 2016. Some of these submissions may ultimately be assigned a review priority of 'standard' which will be updated in the FY 2017 PDUFA Performance Report.

## Final FY 2015 Review Performance

Final FY 2015 review goal performance is presented in the table below. Final performance for submission types that met the goal (90 percent or more review actions completed by the goal date) is shown in bold text. Applications reviewed under the Program have review goals starting from the 60-day filing date, while other submissions have goals starting from the submission receipt date. FDA met or exceeded the 90 percent performance level for 10 of 11 review performance goals in FY 2015. No Class 1 resubmitted NDA and BLA efficacy supplements were received in FY 2015; therefore, this goal category is excluded from the performance goals. More detailed information on performance is available in Appendix A.

Submission Type	Goal: Act on 90 percent within	FY 2015 Performance
Original Priority NMEs and BLAs	6 months from filing date	<b>92%</b>
Original Standard NMEs and BLAs	10 months from filing date	<b>100%</b>
Original Priority non-NME NDAs	6 months	<b>100%</b>
Original Standard non-NME NDAs	10 months	<b>95%</b>
Class 1 Resubmitted NDAs and BLAs	2 months	<b>100%</b>
Class 2 Resubmitted NDAs and BLAs	6 months	<b>97%</b>
Priority NDA and BLA Efficacy Supplements	6 months	<b>94%</b>
Standard NDA and BLA Efficacy Supplements	10 months	<b>95%</b>
Class 1 Resubmitted NDA and BLA Efficacy Supplements	2 months	--
Class 2 Resubmitted NDA and BLA Efficacy Supplements	6 months	64%
NDA and BLA Manufacturing Supplements requiring prior approval	4 months	<b>93%</b>
NDA and BLA Manufacturing Supplements not requiring prior approval	6 months	<b>96%</b>



## Preliminary FY 2016 Review Performance

Preliminary FY 2016 review goal performance is presented in the table below.

- The progress (the number of reviews completed or pending overdue) and the total number of submissions received for each submission type are shown in the second column. Current performance for submission types with a greater proportion of reviews completed will be more representative of final performance. These data include the number of submissions reviewed *on time* (acted on by the PDUFA goal date) or *overdue* (acted on past goal or pending past the goal date) and the final *percent on time* (final performance with no actions pending within the PDUFA goal date). Appendix B contains additional information on the completed reviews.
- Applications reviewed under the Program have review goals starting from the 60-day filing date, while other submissions have goals starting from the submission receipt date.
- Current performance for submission types that are meeting the performance goal (90 percent or more reviews completed by the goal date) as of September 30, 2016, is shown in bold text. FDA is currently meeting or exceeding the 90 percent performance level for 8 of 12 review performance goals.
- If all non-overdue pending submissions are reviewed on time, FDA will achieve the performance presented in the Highest Possible Final Performance column. FDA has the potential to meet or exceed the 90 percent performance level for 11 of 12 review performance goals.

Submission Type	Progress	Goal: Act on 90 Percent Within	FY 2016 Current Performance	Highest Possible Final Performance
Original Priority NMEs and BLAs	5 of 23 complete	6 months	<b>100%</b>	100%
Original Standard NMEs and BLAs	0 of 26 complete	10 months	--	100%
Original Priority non-NME NDAs	5 of 10 complete	6 months	60%	80%
Original Standard non-NME NDAs	9 of 71 complete	10 months	89%	99%
Class 1 Resubmitted NDAs and BLAs	5 of 5 complete	2 months	<b>100%</b>	100%
Class 2 Resubmitted NDAs and BLAs	19 of 32 complete	6 months	<b>100%</b>	100%
Priority NDA and BLA Efficacy Supplements	25 of 45 complete	6 months	<b>100%</b>	100%
Standard NDA and BLA Efficacy Supplements	36 of 135 complete	10 months	<b>92%</b>	98%
Class 1 Resubmitted NDA and BLA Efficacy Supplements	2 of 3 complete	2 months	<b>100%</b>	100%
Class 2 Resubmitted NDA and BLA Efficacy Supplements	8 of 11 complete	6 months	88%	91%
NDA and BLA Manufacturing Supplements requiring prior approval	585 of 823 complete	4 months	<b>96%</b>	97%
NDA and BLA Manufacturing Supplements not requiring prior approval	793 of 1473 complete	6 months	<b>99%</b>	99%

\*Does not include undesignated applications in total.

## **PDUFA Procedural and Processing Goals and Commitments**

### **Procedural and Processing Workload: FY 2011 to FY 2016**

FY 2016 procedural and processing workload, which includes activities related to meeting management, procedural responses, and procedural notifications, is compared to the previous 5-year averages in the table below. The marked upward trend of meeting management workload during PDUFA V continued into FY 2016. From FY2013-2016, meeting workload has increased by approximately 30 percent over this 4-year period as measured by either meeting requests received or meetings scheduled and written responses sent. Meeting type definitions and other terms can be found in Appendix F.

#### **Meeting Management, Procedural Responses, and Procedural Notifications Workload**

<b>Submission/Request Type</b>	<b>FY 11</b>	<b>FY 12</b>	<b>FY 13</b>	<b>FY 14</b>	<b>FY 15*</b>	<b>FY 16</b>	<b>FY 11 to FY 15 5-Year Average</b>	<b>FY 16 Compared to 5-Year Average</b>
Type A Meeting Requests	204	184	140	160	121	202 <sup>†</sup>	162	+25%
Type B Meeting Requests	1,331	1,322	1,394	1,467	1,664	1,697	1,436	+18%
Type C Meeting Requests	715	785	932	995	1,237	1,318	933	+41%
Type A Meetings Scheduled	184	168	118	145	107	191 <sup>†</sup>	144	+33%
Type B Meetings Scheduled	1,263	1,261	1,189	1,154	1,204	1,163	1,214	-4%
Type C Meetings Scheduled	646	725	611	543	603	577	626	-8%
Type B Written Response	--	--	153	249	382	454	-- <sup>‡</sup>	-- <sup>‡</sup>
Type C Written Response	--	--	281	393	546	625	-- <sup>‡</sup>	-- <sup>‡</sup>
Meeting Minutes	1,526	1,585	1,486	1,503	1,517	1,524	1,523	0%
Responses To Clinical Holds	176	178	161	148	161	231	165	+40%
Major Dispute Resolutions	18	32	25	33	15	15	25	-40%
Special Protocol Assessments	313	288	222	201	231	214	251	-15%
Review of Proprietary Names Submitted During IND Phase	128	164	161	170	178	158	160	-1%
Review of Proprietary Names Submitted with NDA/BLA	186	216	224	209	213	204	210	-3%
First-Cycle Filing Review Notifications: NDAs and BLAs	101	126	138	131	149	132	129	+2%
First-Cycle Filing Review Notifications: Efficacy Supplements	95	96	99	136	127	110	111	-1%
Notification of Planned Review Timelines: NDAs and BLAs	101	126	138	131	149	132	-- <sup>‡</sup>	-- <sup>‡</sup>
Notification of Planned Review Timelines: Efficacy Supplements	--	96	99	136	127	110	-- <sup>‡</sup>	-- <sup>‡</sup>

\* FY 2015 numbers were changed to reflect updates to data presented in the FY 2015 PDUFA Performance Report.

<sup>†</sup> Includes meetings denoted as undesignated in the database.

<sup>‡</sup> Due to changing reporting requirements, no past year average is presented for this area.

## Final FY 2015 Procedural and Processing Performance

The table below presents final performance for FY 2015 submissions in meeting goals related to meeting management, procedural responses, and procedural notifications. Final performance for submission types that met the goal (90 percent or more reviews completed by the goal date) is shown in bold text. FDA exceeded the 90 percent performance level for 11 of 18 procedural and processing goals in FY 2015 and exceeded 70 percent performance in all but one category. More detailed information on performance is available in Appendix A.

Submission/Request Type	Goal: 90 Percent within	FY 2015 Performance
Type A Meeting Requests	14 days	<b>96%</b>
Type B Meeting Requests	21 days	<b>91%</b>
Type C Meeting Requests	21 days	86%
Type A Meetings Scheduled	30 days	64%
Type B Meetings Scheduled	60 days	72%
Type C Meetings Scheduled	75 days	80%
Type B Written Response	60 days	76%
Type C Written Response	75 days	81%
Meeting Minutes	30 days	89%
Responses to Clinical Holds	30 days	<b>93%</b>
Major Dispute Resolutions	30 days	<b>93%</b>
Special Protocol Assessments	45 days	<b>96%</b>
Review of Proprietary Names Submitted During IND Phase	180 days	<b>100%</b>
Review of Proprietary Names Submitted with NDA/BLA	90 days	<b>100%</b>
First-Cycle Filing Review Notifications: NDAs and BLAs	74 days	<b>96%</b>
First-Cycle Filing Review Notifications: Efficacy Supplements	74 days	<b>94%</b>
Notification of Planned Review Timelines: NDAs and BLAs	74 days	<b>100%</b>
Notification of Planned Review Timelines: Efficacy Supplements	74 days	<b>99%</b>

## Preliminary FY 2016 Procedural and Processing Performance

The table below presents preliminary performance for FY 2016 submissions in achieving goals related to meeting management, procedural responses, and procedural notifications as outlined under PDUFA V.

- The progress (the number of review activities completed or pending overdue) and the total number of submissions received for each submission type are shown in the second column. These data include the number of submissions reviewed *on time* (acted on by the PDUFA goal date) or *overdue* (acted on past goal or pending past the goal date) and the final *percent on time* (final performance with no actions pending within the PDUFA goal date). More detailed information on the completed review activities is available in Appendix B.
- FDA is currently meeting or exceeding 11 of 18 procedural and processing goals with 65 percent or higher performance in all goal categories.
- If all pending submissions are reviewed on time, FDA has the potential to meet 11 of 18 goals, as seen in the Highest Possible Final Performance column.

Submission/Request Type	Goal: 90 Percent within	Goal: 90 Percent within	FY 2016 Current Performance	Highest Possible Final Performance
Type A Meeting Requests	148 of 202 complete	14 days	82%	87%
Type B Meeting Requests	1666 of 1697 complete	21 days	<b>92%</b>	92%
Type C Meeting Requests	1296 of 1318 complete	21 days	88%	89%
Type A Meetings Scheduled	123 of 191 complete	21 days	67%	79%
Type B Meetings Scheduled	1105 of 1163 complete	30 days	70%	71%
Type C Meetings Scheduled	551 of 577 complete	75 days	77%	78%
Type B Written Response	404 of 454 complete	60 days	80%	82%
Type C Written Response	517 of 625 complete	75 days	85%	87%
Meeting Minutes	1052 of 1524 complete	30 days	<b>92%</b>	94%
Responses to Clinical Holds	220 of 231 complete	30 days	<b>95%</b>	95%
Major Dispute Resolutions	11 of 15 complete	30 days	<b>100%</b>	100%
Special Protocol Assessments	183 of 214 complete	45 days	<b>96%</b>	96%
Review of Proprietary Names Submitted During IND Phase	103 of 158 complete	180 days	<b>100%</b>	100%
Review of Proprietary Names Submitted with NDA/BLA	165 of 204 complete	90 days	<b>99%</b>	100%
First-Cycle Filing Review Notifications: NDAs and BLAs	106 of 132 complete	74 days	<b>94%</b>	95%
First-Cycle Filing Review Notifications: Efficacy Supplements	92 of 110 complete	74 days	<b>93%</b>	95%
Notification of Planned Review Timelines: NDAs and BLAs	106 of 132 complete	74 days	<b>100%</b>	100%

Submission/Request Type	Goal: 90 Percent within	Goal: 90 Percent within	FY 2016 Current Performance	Highest Possible Final Performance
Notification of Planned Review Timelines: Efficacy Supplements	88 of 110 complete	74 days	<b>100%</b>	100%

## Meeting Planned Review Timeline Target Dates

FDA has committed to inform applicants of the planned timeline for feedback related to labeling and postmarketing requirements (PMRs) and postmarketing commitments (PMCs). This timeline must be included in a letter sent within 14 days of the 60-day filing date (known as a 74-day letter).

FDA committed to report performance in meeting the planned review timelines for communication of labeling comments and PMR/PMC requirements/requests though there is no specific performance goal. This commitment includes reporting on the number and percentage of applications for which the planned target dates for communication of labeling comments and PMRs/PMCs were met. If FDA receives a major amendment after issuing the 74-day letter, the target date included is no longer applicable. The percentage of NDAs and BLAs and Efficacy Supplements that met their target date was around 70 percent for both FY 2015 and preliminarily for FY 2016.

### Final FY 2015 Cohort Performance

Application Type	Number of 74-Day Letters with Timelines	Target Date Inapplicable	Target Date Met*	Target Date Not Met	Withdrawn	Percent of Applications Target Date Met
NDAs and BLAs	149	13	92	44	0	<b>68%<sup>†</sup></b>
Efficacy Supplements	126	3	86	36	1	<b>70%</b>

\* Target dates for ten NDAs/BLAs and four efficacy supplements were met by communicating deficiencies.

<sup>†</sup> FY 2015 numbers were changed to reflect updates to data presented in the FY 2015 PDUFA Performance Report.

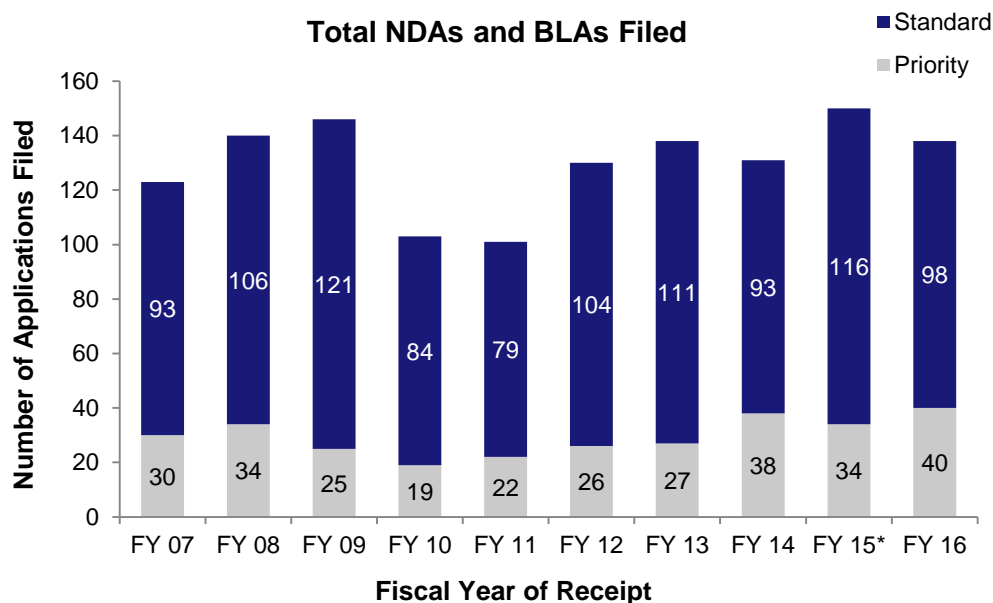
### Preliminary FY 2016 Cohort Performance

Application Type	Number of 74-Day Letters With Timelines	Target Date Inapplicable	Target Date Met*	Target Date Not Met	Applications Pending within Target Date	Withdrawn	Percent of Applications Target Date Met
NDAs and BLAs	106	5	28	14	58	1	<b>67%</b>
Efficacy Supplements	88	2	35	12	38	1	<b>74%</b>

\* Target dates for three NDAs/BLAs were met by communicating deficiencies.

## PDUFA Trend Graphs

The number of NDAs and BLAs filed from FY 2007 to FY 2016 is presented in the graph below. The total number of standard applications of NDAs and BLAs filed in FY 2016 decreased compared to the number filed in FY 2015, while the number of priority applications filed increased.

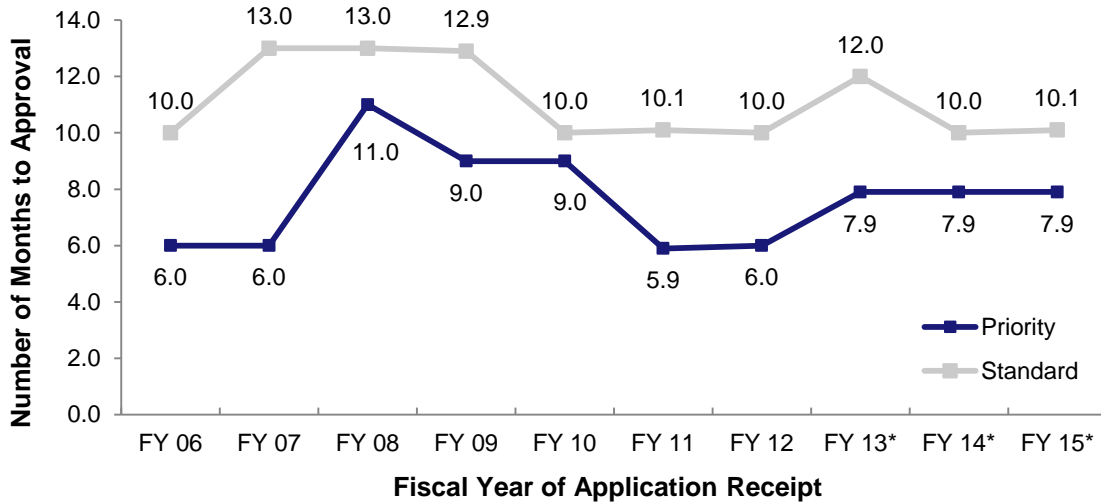


\*FY 2015 numbers were changed to reflect updates to data presented in the FY 2015 PDUFA Performance Report.

Median total time to approval for priority and standard applications for FY 2006 through FY 2015 are presented in the graph below.<sup>6</sup> After an increase in median approval time in FY2013 compared to FY 2012 and FY 2011, FY 2015 median approval times remained the same for priority applications and increased slightly to 10.1 months for standard applications. FY 2016 data are too preliminary to estimate the median approval time.

<sup>6</sup> The total time for applications that are approved on the first cycle include only FDA response time. Applications that are approved after multiple review cycles include both FDA and sponsor time. Median total approval time is the median of all application times for a given cohort.

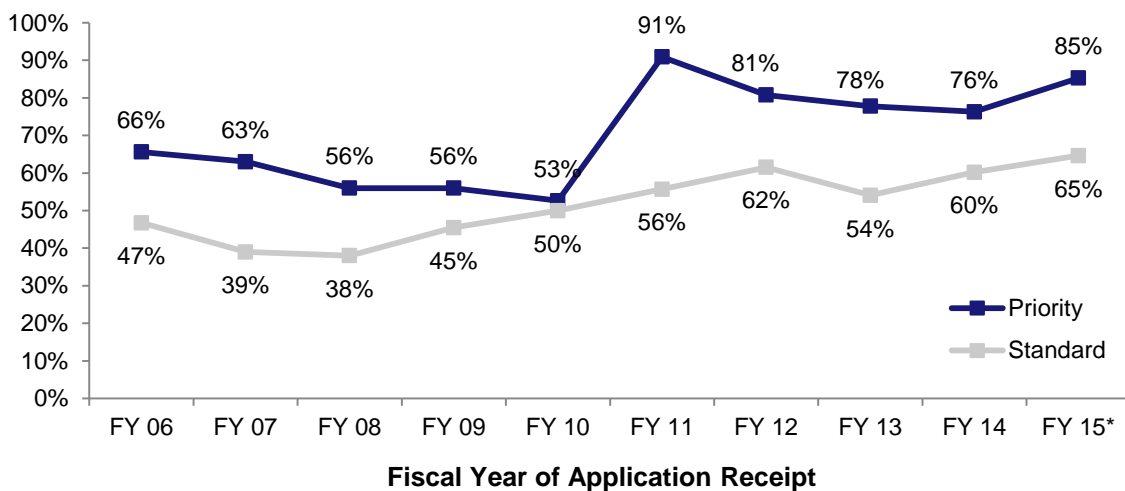
### Median Time to Application Approval for all Filed NDAs and BLAs (Months)



\* The median approval times for the three most recent years are estimated.

The percentages of first-cycle approvals for priority and standard NDAs and BLAs filed from FY 2006 to FY 2015 are presented in the graph below. Standard applications saw a steady increase in first-cycle approvals from FY 2009 to FY 2012, reaching a 10-year high in FY 2012 with 62 percent of applications approved on the first cycle. Thus far for the FY 2015 cohort, which is still preliminary, 65 percent of standard applications have been approved on the first cycle. First-cycle approvals for priority NDAs and BLAs increased in FY 2015, with 85 percent of applications approved on the first cycle. The FY 2016 data are too preliminary to estimate the percent of first-cycle approvals.

### Percent of Filed NDAs and BLAs Approved on the First Cycle



\* First cycle approvals are still possible for FY 2015 standard applications, so the data are preliminary.

## ***Additional PDUFA V Commitments***

---

Under section XIII of the PDUFA Commitment Letter, FDA committed to report the progress on the additional program enhancements identified in the following sections of the Commitment Letter:<sup>7</sup>

- Section IX: Enhancing Regulatory Science and Expediting Drug Development
- Section X: Enhancing Benefit-Risk Assessment in Regulatory Decision-Making
- Section XI: Enhancement and Modernization of the FDA Drug Safety System
- Section XII: Improving the Efficiency of Human Drug Review through Required Electronic Submissions and Standardization of Electronic Drug Application Data

These enhancements are designed to improve the efficiency of both drug development and the human drug review process. Section 104 of FDASIA further requires FDA to report on the Agency's plans for meeting the PDUFA V commitments. The progress reports in this section discuss the work FDA performed in FY 2016 on commitments in sections IX-XII of the commitment letter. Commitments that were met and reported in the FY 2015 PDUFA Performance Report are not repeated here. FDA is also including an update on accomplishments under Section XIV: Information Technology Goals. Each accomplishment includes a reference to the specific section of the commitment letter. References are also provided to published guidances, meeting summaries, and other pertinent information.

FDA is dedicated to the goals outlined in these sections of the Commitment Letter. Where applicable, for each section, additional information is included on other activities FDA has conducted that are not specifically required but further the goals outlined in the commitment letter.

---

<sup>7</sup> [www.fda.gov/downloads/ForIndustry/UserFees/PrescriptionDrugUserFee/UCM270412.pdf](http://www.fda.gov/downloads/ForIndustry/UserFees/PrescriptionDrugUserFee/UCM270412.pdf)



## Section IX: Enhancing Regulatory Science and Expediting Drug Development

Commitment Title	FY 2016 Accomplishments
<b>IX.A Promoting Innovation Through Enhanced Communication Between FDA and Sponsors During Drug Development</b>	<ul style="list-style-type: none"> <li>• FDA's enhanced communication functions are located in CDER's Office of New Drugs and the Center for Biologics Evaluation and Research's (CBER's) Manufacturing Assistance and Technical Training Branch. During FY 2016, CDER's Enhanced Communication Team (ECT) responded to 112 contacts regarding the drug development process, referred 141 contacts regarding other issues to the appropriate resources, and received 0 requests for facilitation of issues with review divisions. CDER's ECT provided external training on best communication practices to the sponsor community at professional conferences. At these training sessions, CDER's policies and practices regarding communication with sponsors were shared and feedback from sponsor stakeholders on recommended improvements was received verbally and via email. CDER's ECT collaborated with the Office of New Drugs (OND) Learning and Career Development Team to develop a best communication practices eLearning module. (IX.A.1-.6)</li> <li>• CDER's training group comprised of members from OND, the Office of Pharmaceutical Quality (OPQ), and the Office of Safety and Epidemiology (OSE) developed and provided internal training on best communication practices to CDER staff involved in the review of INDs. In addition, CDER offered internal communication skills training in areas such as interpersonal communication, negotiation, collaboration, and constructive conflict management. (IX.A.7)</li> <li>• CBER provided internal training on the Best Communication Practices Guidance and other CBER policies and practices to CBER staff who are involved in the review of INDs. This training was developed and taught by a team of staff from multiple CBER offices. In addition, CBER offered internal communication skills training in areas such as interpersonal communication, negotiation, collaboration, and having difficult conversations.</li> <li>• The <i>Best Practices for Communication Between IND Sponsors and FDA During Drug Development</i><sup>8</sup> draft guidance for industry and review staff published in December 2015. CDER and CBER established a guidance working group comprised of members from OND, OPQ, OSE to review docket comments and compose revisions to the draft guidance. (IX.A.8)</li> <li>• The <i>Formal Meetings Between the FDA and Sponsors or Applicants of PDUFA Products</i><sup>9</sup> draft guidance for industry published in March 2015. CDER and CBER established a guidance working group comprised of members from OND, OPQ, and OSE to review docket comments and compose revisions to the draft guidance. (VIII.D.6)</li> </ul>
<b>IX.B. Advancing the Science of Meta-Analysis Methodologies</b>	<ul style="list-style-type: none"> <li>• FDA continued efforts in FY 2016 to recruit and hire additional statistical, epidemiological, and medical reviewers to evaluate and conduct meta-analyses to explore safety signals. (IX.B.1).</li> <li>• Development of a draft guidance on meta-analyses of randomized controlled clinical trials to evaluate safety and FDA's intended approach for the use of meta-analyses in regulatory decision-making continued through FY 2016. FDA expects</li> </ul>

<sup>8</sup> <http://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/UCM475586.pdf>

<sup>9</sup> <http://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/UCM437431.pdf>

	<p>to publish this guidance in FY 2017. Through the publication of this draft guidance, FDA's intended approach for the use of meta-analyses in regulatory decision-making will be clarified. (IX.B.2 and 3)</p> <ul style="list-style-type: none"> <li>• CBER created a database of influenza vaccine clinical trials, particularly those assessing quadrivalent influenza vaccines. The database will be used to evaluate novel statistical methods to examine subgroup differences in safety and/or efficacy.</li> <li>• CBER developed a database and analytical platform for evaluating safety issues with chimeric antigen receptor T-cell products across multiple products.</li> <li>• CBER developed a novel empirical Bayesian meta-analysis methodology for synthesizing historical data to evaluate product safety and identify heterogeneous subgroups. This work led to a publication and numerous presentations and posters at scientific conferences: "Addressing Prior-data Conflict with Empirical Meta-analytic Predictive Priors in Clinical Studies with Historical Information."<sup>10</sup> <i>Journal of Biopharmaceutical Statistics</i>.</li> </ul>
<p><b>IX.C. Advancing the Use of Biomarkers and Pharmacogenomics</b></p>	<ul style="list-style-type: none"> <li>• FDA completed recruitment efforts for the allotted positions under this enhancement to hire subject matter experts in biomarkers and pharmacogenomics. Staff capacity is being applied in IND/NDA/BLA review through consultation with Genomics and Targeted Therapy Group Staff and other Clinical and Biostatistics experts in pharmacogenomics and biomarkers. (IX.C.1)</li> <li>• FDA hosted numerous internal educational lectures provided by visiting scientists and expert FDA staff on topics related to pharmacogenomics, personalized medicine, and biomarker development. (IX.C.2)</li> <li>• Working groups that continue to meet regularly include the FDA-wide Genomics Working Group (all centers; focus on high-throughput sequencing issues), Intercenter Drug-Test Collaborative (CBER, CDER, Center for Devices and Radiological Health (CDRH); focus on policy, process, and product-specific issues), and the FDA-wide Biomarkers Working Group.</li> <li>• FDA participates biannually in trilateral exchange between European Medicines Agency/FDA/Pharmaceuticals and Medical Devices Agency pharmacogenomics cluster and discusses emerging topics in the area of genomics/biomarkers in drug development/approval.</li> <li>• In cooperation with the National Institutes of Health (NIH), FDA developed and published BEST (Biomarkers, EndpointS, and other Tools) glossary to improve communication and to align expectations between stakeholders.</li> <li>• FDA published a list of biomarkers<sup>11</sup> used as outcomes in development of FDA-approved therapeutics.</li> <li>• FDA co-sponsored a public workshop<sup>12</sup> on Liquid Biopsies in Oncology Drug and Device Development (with American Association for Cancer Research) and three workshops on evidentiary considerations for biomarker qualification (with University of Maryland-Center for Excellence in Regulatory Science and Innovation, Brookings, Foundation for NIH/Critical Path Initiative (CPI).</li> <li>• FDA held 22 CPI Meetings with stakeholders from private industry, academia, and public-private consortia.</li> </ul>

<sup>10</sup> <http://www.tandfonline.com/doi/full/10.1080/10543406.2016.1226324>

<sup>11</sup> <http://www.fda.gov/Drugs/DevelopmentApprovalProcess/DrugDevelopmentToolsQualificationProgram/ucm483052.htm>

<sup>12</sup> <http://www.fda.gov/MedicalDevices/NewsEvents/WorkshopsConferences/ucm494610.htm>

	<ul style="list-style-type: none"> <li>○ FDA published 3 biomarker qualification recommendations as final guidance; accepted 4 letters of intent, held 9 consultation and advice meetings for 6 programs, and issued 4 letters of support.</li> <li>○ FDA published guidance for industry including International Council for Harmonisation (ICH) E18 related to "Genomic Sampling and Management of Genomic Data,"<sup>13</sup> "Considerations for Use of Histopathology and Its Associated Methodologies to Support Biomarker Qualification,"<sup>14</sup> and "Principles for Co-development of an In Vitro Companion Diagnostic Device with a Therapeutic Product."<sup>15</sup></li> <li>○ FDA completed multiple regulatory science projects to characterize and advance biomarkers for regulatory use, including several microRNA and electrophysiology projects aimed at drug safety.</li> </ul>
<p><b>IX.D. Advancing Development of Patient Reported Outcomes (PROs) and Other Endpoint Assessment Tools</b></p>	<ul style="list-style-type: none"> <li>• CDER published the Compendium of Clinical Outcome Assessments in a pilot phase<sup>16</sup> in January 2016. (IX.D.2)</li> <li>• CBER conducted staff training during FY2016, including <ul style="list-style-type: none"> <li>○ SPOR1 Continuing Education: Short Courses on PROs and Utilities (May 2016)</li> <li>○ Webinar: Final Guidance on PPIs (September 2016)</li> <li>○ FDA Statistical Association PRO workshop (May 2016)</li> <li>○ Patient-Reported Outcomes Item Response Theory (PRO)(October 2016)</li> </ul> </li> <li>• CBER participated in the Innovative Medicines Initiative (IMI) Patient Preferences in Benefit-Risk Assessment Across the Drug Life Cycle (PREFER).</li> </ul>
<p><b>IX.E Advancing Development of Drugs for Rare Diseases</b></p>	<ul style="list-style-type: none"> <li>• The Rare Disease Program (RDP) continued to support the Data Analysis Search Host (DASH) database that provides quick access to comprehensive scientific and regulatory data that is not otherwise available from a single source. This data supports analyses of rare and common diseases, NME drug and biologic actions, and major efficacy supplements (new indications and/or new populations). The database has improved our understanding of the impact of expedited development programs, informed the expedited programs and the common issues in rare diseases drug development guidances, and formed the basis of staff training. The database has proven to be an invaluable resource for evaluation of the impact of the RDP which seeks to facilitate, support and accelerate the development of drug and biologic products for the treatment of patients with rare disorders. (IX.E.6)</li> <li>• The RDP continued to conduct yearly internal one-day training for FDA review staff including various topics related to rare disease drug development, review, and approval.</li> <li>• The RDP helped support the first externally led Patient Focused Drug Development meeting conducted by the Myotonic Dystrophy Foundation.</li> </ul>

<sup>13</sup> <http://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/UCM504556.pdf>

<sup>14</sup> <http://www.fda.gov/downloads/drugs/guidancecomplianceinformation/guidances/ucm285297.pdf>

<sup>15</sup> <http://www.fda.gov/ucm/groups/fdagov-public/@fdagov-meddev-gen/documents/document/ucm510824.pdf>

<sup>16</sup> <http://www.fda.gov/Drugs/DevelopmentApprovalProcess/DevelopmentResources/ucm459231.htm>

## Section X. Enhancing Benefit-Risk Assessment in Regulatory Decision-Making

Commitment Title	FY 2016 Accomplishments
<p><b>Implementation of a Structured Framework for Benefit-Risk Assessment in the New Drug and Biologic Review Process</b></p>	<ul style="list-style-type: none"> <li>• CDER continued implementation of FDA's Benefit-Risk Framework in the new drug review process for NME NDAs and original BLAs received by the Agency on or after March 1, 2015. In FY 2016, 17 NME NDA and original BLA approvals contained one or more completed Benefit-Risk Frameworks within the publicly-available drug review documentation. Implementation of the Benefit-Risk Framework into other areas of new drug review is planned for FY 2017. (X.B)</li> <li>• CBER continued implementation of the benefit-risk evaluation into the clinical review of BLAs and BLA supplements. This includes completing the addition of a structured qualitative benefit-risk assessment in the clinical review template.</li> <li>• In FY 2016, FDA initiated a Benefit-Risk Implementation Committee (BRIC), which serves the advisory, oversight, and support functions of "Change Control Board" and "Benefit-Risk Advisory Group" outlined in the FDA's 2013 Draft Implementation Plan.<sup>17</sup></li> <li>• CDER's rollout of the revised templates for NME NDAs and original BLAs has been accompanied by: a) an internal website with guidelines and samples; b) multi-module training on Benefit-Risk Framework and templates, offered bi-monthly; and c) individual coaching and support to reviewers offered. (X.D)</li> <li>• CBER's Office of Biostatistics and Epidemiology offered internal courses on risk assessment, risk management, and risk communication. Benefit-Risk assessment approaches, such as multi-criteria decision analysis, the CIRS-BRAT framework, the Unified Methods for Benefit-Risk Assessment, and number needed to treat/harm, were covered in these courses.</li> <li>• In September 2015, FDA awarded a contract to a qualified third party to support an evaluation of the Benefit-Risk Framework implementation into CDER's and CBER's new drug review, in accordance with the evaluation plan outlined in the 2013 Draft Implementation Plan. The evaluation cohort comprises NME NDAs and original BLAs that were received by FDA between March 1, 2015 and February 29, 2016. The evaluation includes a multi-modal assessment involving an independent review by the contractor of review processes and documentation, interviews with FDA staff, interviews with applicants, and interviews with external stakeholders such as patients, healthcare providers, and patient organizations. In FY 2016, the contractor, with oversight by an FDA Technical Advisory Group, developed an evaluation plan and data collection instruments; and collected and analyzed data on more than 20 applications that received FDA action. Data collection is on-going and completion of the evaluation is planned for September 2017. (X.A)</li> <li>• FDA provided leadership on the ICH M4E (R2) working group that finalized the guidance "<i>Revision of M4E Guideline on Enhancing the Format and Structure of Benefit-Risk Information in ICH</i>"<sup>18</sup> on June 16, 2016.</li> </ul>

<sup>17</sup> <http://www.fda.gov/downloads/ForIndustry/UserFees/PrescriptionDrugUserFee/UCM329758.pdf>

<sup>18</sup> [http://www.ich.org/fileadmin/Public\\_Web\\_Site/ICH\\_Products/CTD/M4E\\_R2/Efficacy/M4E\\_R2\\_Step\\_4.pdf](http://www.ich.org/fileadmin/Public_Web_Site/ICH_Products/CTD/M4E_R2/Efficacy/M4E_R2_Step_4.pdf)

<p><b>Patient-Focused Drug Development (PFDD)</b></p>	<ul style="list-style-type: none"> <li>• In FY 2016, FDA held four PFDD meetings on the following disease areas: <ul style="list-style-type: none"> <li>○ non-tuberculous mycobacterial infections (included a scientific discussion)</li> <li>○ psoriasis</li> <li>○ neuropathic pain associated with peripheral neuropathy</li> <li>○ patients who have received an organ transplant (included a scientific discussion).(X.C)</li> </ul> </li>   <li>• In FY 2016, FDA published the following PFDD summary reports<sup>19</sup> (X.C): <ul style="list-style-type: none"> <li>○ In November 2015, FDA published the summary report of the March 2015 meeting on Chagas Disease.</li> <li>○ In January 2016, FDA published the summary report of the May 2015 meeting on Functional Gastrointestinal Disorders.</li> <li>○ In March 2016, FDA published the summary report of the September 2015 meeting on Huntington's Disease.</li> <li>○ In April 2016, FDA published the summary report of the October 2015 meeting on non-tuberculous mycobacterial infections.</li> <li>○ In April 2016, FDA published the summary of the September 2015 meeting on Parkinson's Disease.</li> <li>○ In May 2016, FDA published the summary of September 2014 meeting on Hemophilia A, Hemophilia B, von Willebrand Disease and Other Heritable Bleeding Disorders.</li> <li>○ In September 2016, FDA published the summary of the September 2015 meeting on Alpha-1 Antitrypsin Deficiency.</li> </ul> </li> </ul>
---	---

---

<sup>19</sup> <http://www.fda.gov/ForIndustry/UserFees/PrescriptionDrugUserFee/ucm368342.htm>

## Section XI. Enhancement and Modernization of the FDA Drug Safety System

Commitment Title	FY 2016 Accomplishments
<p><b>XI.A Measure the Effectiveness of Risk Evaluation and Mitigation Strategy (REMS) and Standardize and Better Integrate REMS into the Healthcare System</b></p>	<ul style="list-style-type: none"> <li>• On September 30, 2016, FDA published a revised implementation guide describing how sponsors, health care information system developers, and other stakeholders can share REMS information leveraging Structured Product Labeling (SPL). This completed the <i>Pharmacy Systems under REMS</i> priority project. (XI.A.2)               <ul style="list-style-type: none"> <li>○ FDA held an introductory webinar<sup>20</sup> on August 24, 2016</li> <li>○ Before completing this project, FDA successfully piloted<sup>21</sup> the data model and data elements with 9 REMS sponsors to receive feedback and further refine the SPL materials.</li> </ul> </li> <li>• On September 21, 2016, FDA published guidance<sup>22</sup> on how FDA applies statutory criteria to determine whether REMS is necessary to ensure that the benefits of a drug outweigh the risks. (XI.A.1)</li> <li>• On April 14, 2016, FDA participated in an expert workshop held by the Duke-Margolis Center for Health Policy (funded under a cooperative agreement with FDA) entitled, “Risk Evaluation and Mitigation Strategies: Improving Benefit-Risk Counseling Between Providers and Patients Expert Workshop.”<sup>23</sup> Input received from this meeting is helping to inform ongoing exploration of benefit/risk counseling practices that will culminate in a report of findings as described under the <i>Providing Benefit/Risk Information to Patients</i> REMS Priority Project. (XI.A.2)</li> <li>• On October 5-6, 2015, FDA held a public meeting entitled, “Risk Evaluation and Mitigation Strategies (REMS): Understanding and Evaluating Their Impact on the Health Care Delivery System and Patient Access.”<sup>24</sup> The focus of this meeting was on identifying improved approaches for understanding, evaluating, and minimizing REMS burden on the health care delivery system to the extent practicable, and on helping to assure patient access to drugs that are subject to REMS. (XI.A.2)</li> <li>• On October 5, 2015, FDA launched the Common REMS Platform Initiative;<sup>25</sup> a new effort to continue standardizing REMS and better integrate them into the healthcare system by leveraging health data standards.               <ul style="list-style-type: none"> <li>○ FDA participated in a Duke-Margolis Center for Health Policy public workshop<sup>26</sup> on this project on June 7, 2016</li> </ul> </li> <li>• FDA continued working to develop guidance on methodologies for assessing REMS (XI.A.3)</li> <li>• FDA continued exploring the feasibility of incorporating CME into REMS programs, as indicated by the Prescriber Education REMS Priority Project. (XI.A.2)</li> </ul>

<sup>20</sup> <https://concerted.adobeconnect.com/p45n3m5cdi9/?launcher=false&fcsContent=true&pbMode=normal>

<sup>21</sup> <https://www.federalregister.gov/documents/2015/10/06/2015-25349/electronic-submission-of-final-approved-risk-evaluation-and-mitigation-strategies-and-summary>

<sup>22</sup> <http://www.fda.gov/ucm/groups/fdagov-public/@fdagov-drugs-gen/documents/document/ucm521504.pdf>

<sup>23</sup> <https://healthpolicy.duke.edu/events/risk-evaluation-and-mitigation-strategies-improving-benefit-risk-counseling-between-providers>

<sup>24</sup> <http://www.fda.gov/Drugs/NewsEvents/ucm441308.htm>

<sup>25</sup> <http://www.fda.gov/downloads/ForIndustry/UserFees/PrescriptionDrugUserFee/UCM507451.pdf>

<sup>26</sup> <http://calendar.duke.edu/events/show?b=de&calPath=%252Fpublic%252Fcal%252FMainCal&guid=CAL-8a0870ef-54c7ebdc-0154-de81110a-000030ffdemobedework@mysite.edu&recurrenceld>

	<ul style="list-style-type: none"> <li>○ FDA conducted outreach with stakeholders to outline the possible models for incorporating CE in a single drug REMS. Stakeholders provided feedback on the models including what challenges/barriers might exist.</li> <li>● FDA continued evaluating stakeholder feedback to improve the REMS@FDA website (originally launched in 2015). (XI.A.2)</li> </ul>
<p><b>XI.B Sentinel as a Tool for Evaluating Drug Safety Issues That May Require Regulatory Action</b></p>	<ul style="list-style-type: none"> <li>● FDA held its annual public workshop<sup>27</sup> on February 3, 2016, to discuss a variety of topics on active medical product surveillance, including current and emerging Sentinel projects as well as projects that would be appropriate to determine the feasibility of using Sentinel to evaluate drug safety issues that may require regulatory action. (XI.B.1)</li> <li>● FDA is planning for the final assessment of Sentinel in PDUFA V to evaluate the strengths, limitations, and the appropriate use of Sentinel for informing regulatory actions to manage safety issues. The final assessment will be completed and posted on the PDUFA V public website<sup>28</sup> by the end of FY17(XI.B.3)</li> <li>● FDA advanced multiple Sentinel projects in FY 2016 by developing or modifying study protocols or surveillance plans for vaccines and blood products. These were all posted to the Sentinel website.<sup>29</sup> They include the following: <ul style="list-style-type: none"> <li>○ the surveillance plan for the sequential analysis of Gardasil 9 (HPV9) vaccine safety;</li> <li>○ the study protocol for the evaluation of HPV9 vaccine safety surveillance using the TreeScan signal identification/data mining method;</li> <li>○ the study protocol for the Prevnar 13 (PCV13) vaccine and Kawasaki Disease;</li> <li>○ the study protocol for the transfusion-related acute lung injury (TRALI) after administration of platelets, plasma, and red blood cells; the</li> <li>○ the evaluation of Scan Statistics for assessing vaccine safety in pregnancy study; the</li> <li>○ the birth certificate linkage and development of standard file structures for birth and fetal death certificate data and implementation of data matching for the Post-Licensure Rapid Immunization Safety Monitoring (PRISM) Program; an assessment of febrile seizures in children ages 6-59 months<sup>30</sup> following influenza vaccination;</li> <li>○ a protocol-based assessment of the association between parenteral iron products and anaphylactoid/anaphylactic reactions.<sup>31</sup> (XI.B.2)</li> </ul> </li> <li>● FDA completed several projects in Sentinel and posted results to the Sentinel website, including: Evaluation of the Risk of Thromboembolic Events After Immunoglobulin Administration;<sup>32</sup> pilot study and final report of Self-Controlled Tree-Temporal Scan Analysis for HPV4 Vaccine;<sup>33</sup> and Evaluation of Scan Statistics for Assessing Vaccine Safety in Pregnancy.<sup>34</sup></li> </ul>
<p><b>XI.C Conduct and Support</b></p>	<ul style="list-style-type: none"> <li>● FDA Adverse Event Reporting System (FAERS) data entry modernization</li> </ul>

<sup>27</sup> <https://healthpolicy.duke.edu/sentinel>

<sup>28</sup> <http://www.fda.gov/ForIndustry/UserFees/PrescriptionDrugUserFee/ucm464042.htm>

<sup>29</sup> <https://www.sentinelssystem.org/>

<sup>30</sup> <https://www.sentinelssystem.org/vaccines-blood-biologics/assessments/influenza-vaccines-and-febrile-seizures-prism>

<sup>31</sup> <https://www.sentinelssystem.org/drugs/assessments/parenteral-iron-and-anaphylactoid-reactions-protocol-v20>

<sup>32</sup> <https://www.sentinelssystem.org/vaccines-blood-biologics/assessments/209>

<sup>33</sup> <https://www.sentinelssystem.org/sentinel/methods/339>

<sup>34</sup> <https://www.sentinelssystem.org/sentinel/methods/333>

<p><b>Activities Designed to Modernize the Process of Pharmacovigilance</b></p>	<p>continued in FY 2016 with implementation of new technologies where the paper-based process of triaging adverse event reports was fully automated.</p> <ul style="list-style-type: none"> <li>• FDA announced the availability of its FAERS Regional Implementation Specifications for the International Conference on Harmonisation (ICH) E2B (R3) Specification.<sup>35</sup> FDA made this technical specifications document available to assist interested parties in electronically submitting individual case safety reports (ICSRs) (and ICSR attachments) to CDER and CBER.</li> <li>• FDA completed the transition of the Sentinel Program management from the CDER Office of Medical Policy to the CDER's OSE to facilitate integration of the Sentinel System into the regulatory review processes in FY 2016.</li> <li>• A subcomponent of the Sentinel System known as the system of Active Risk Identification and Analysis (ARIA), consisting of automated tools and the Sentinel Common Data Model, was implemented to integrate the Sentinel System into FDA's regulatory pre/post-market review process.</li> <li>• FDA convened a broad-range of training events to strengthen FDA staff understanding of the Sentinel System and FDA regulatory processes. The trainings focused on: <ul style="list-style-type: none"> <li>○ New analytical tools for assessing use of medical products in pregnant women</li> <li>○ Overview of capabilities through new Sentinel Data Partners</li> <li>○ Regulatory training in assessing sufficiency of the Sentinel System</li> <li>○ Technical training in propensity score matching in Sentinel analyses (XI.C.1)</li> </ul> </li> <li>• Contracts were awarded to Researched Abuse, Diversion and Addiction-Related Surveillance (RADARS) and Inflexxion (treatment center data) to obtain post-marketing prescription and over-the-counter drug abuse surveillance data from individuals entering or being assessed for substance abuse treatment to help inform the Agency's regulatory actions and abuse prevention programs.</li> <li>• FDA continued supporting research into text mining, natural language processing, analytical methods, and machine learning to accurately classify unstructured data within MedWatch and FAERS reports.</li> </ul>
---	---

<sup>35</sup> <https://www.federalregister.gov/documents/2016/06/23/2016-14845/international-conference-on-harmonisation-electronic-transmission-of-postmarket-individual-case>



## Section XII. Improving the Efficiency of Human Drug Review through Required Electronic Submissions and Standardization of Electronic Drug Application Data

Commitment Title	FY 2016 Accomplishments
<b>Electronic Submissions Requirement</b>	<ul style="list-style-type: none"> <li>• FDA posted the FDA eCTD v4.0 Module 1 Implementation Package <sup>36</sup> on March 31, 2016. (XII.D&amp;G)</li> <li>• ICH posted the electronic common technical document (eCTD) v4.0 Implementation Package <sup>37</sup> on April 4, 2016. (XII.D&amp;G)</li> <li>• FDA developed the eCTD Technical Conformance Guidance and updates to related specifications (e.g., transmission) to be in alignment with final eCTD guidance on required submissions in conformance with the eCTD format. (XII.D&amp;G)</li> <li>• The eCTD web page was also updated and includes a link to the eCTD Data Standards spreadsheet. (XII.D&amp;G)</li> </ul>
<b>Standardization of Drug Application Data</b>	<ul style="list-style-type: none"> <li>• FDA published version 3.0 of Therapeutic Area Standards Initiative Project Plan on the FDA Therapeutic Area Standards webpage. <sup>38</sup> An internal FDA project is in place to develop recommendations for efficacy endpoints. FDA participated in external collaboration with Clinical Data Interchange Standards Consortium <sup>39</sup> (CDISC) and the Coalition for Accelerating Standards and Therapies (CAFAST). (XII.E)</li> <li>• FDA posted version 3.1 of the Study Data Standards Technical Conformance Guide <sup>40</sup> in July 2016. (XII.D-F)</li> <li>• FDA Regional Implementation Specifications for ICH E2B (R3) Implementation: Postmarket Submission of Individual Case Safety Reports for Drugs and Biologics, Excluding Vaccines was published on June 23 2016. (XII.D&amp;G)</li> <li>• Production eVAERS (Vaccine Adverse Event Reporting System) Release 1 System was implemented on June 5, 2016.</li> <li>• Several pharmaceutical companies have gone live with electronic ICSR reporting before the expiration of their waiver period. (XII.C)</li> <li>• Identification of Medicinal Products (IDMP) <ul style="list-style-type: none"> <li>○ ISO/DTS 19844:2016 (Substance) – 2016 iteration ready for publication; 2017 iteration ballot completed. (XII.C)</li> <li>○ ISO/DTS 20443 (MPID) – Completing disposition of Draft Technical Specification (DTS) comments. (XII.C)</li> <li>○ ISO/DIS 11615 (MPID) Revision – Registered as Draft International Standard (DIS) on August 9, 2016; DIS ballot initiated. (XII.C)</li> <li>○ ISO/DTS 20451 (PhPID) – Completing disposition of DTS comments. (XII.C)</li> </ul> </li> </ul>

<sup>36</sup> <http://www.fda.gov/Drugs/DevelopmentApprovalProcess/FormsSubmissionRequirements/ElectronicSubmissions/ucm309911.htm>

<sup>37</sup> <http://estri.ich.org/new-eCTD/index.htm>

<sup>38</sup> <http://www.fda.gov/drugs/developmentapprovalprocess/formssubmissionrequirements/electronic submissions/ucm287408.htm>

<sup>39</sup> <http://www.cdisc.org/therapeutic>

<sup>40</sup> <http://www.fda.gov/downloads/ForIndustry/DataStandards/StudyDataStandards/UCM384744.pdf>

	<ul style="list-style-type: none"> <li>○ ISO/DIS 11616 (PhPID) Revision – Registered as Draft International Standard (DIS) on August 9, 2016; DIS ballot initiated. (XII.C)</li> <li>• ISO/TS 20440 (pharmaceutical dose forms, units of presentation, routes of administration and packaging) – Published as International Standard on June 1, 2016. (XII.C)</li> </ul>
<b>Clinical Terminology Standards</b>	<ul style="list-style-type: none"> <li>• Published annual updates to the Therapeutic Area Standards <sup>41</sup>web page in April 2016. Currently 54 therapeutic areas are listed. (XII.E)</li> </ul>

---

<sup>41</sup><http://www.fda.gov/drugs/developmentapprovalprocess/formssubmissionrequirements/electronic submissions/ucm287408.htm>

## Section XIV. Information Technology Goals

Performance Goal	FY 2016 Accomplishments
<b>Supporting Regulatory Operations</b>	<ul style="list-style-type: none"> <li>• Electronic Submissions Gateway (ESG) increased the server capacity by 100 percent in October 2015 to ensure the ability to handle continued increases in submission volume. (XIV.A)</li> <li>• Infrastructure provisioning and software license procurement for all environments to support Phase I was completed January 2016. (XIV.A)</li> <li>• The Pre-Production and Production implementation of Phase I began on 6/1/2015. Phase I implementation included updating hardware from Solaris to Linux and software for Center Inbox processing from Activator to Cross File Transfer providing faster processing time and submission receipt generation by 79 percent. Phase I was completed April 2016. (XIV.A)</li> <li>• The 2nd Generation ESG Modernization Phase II is proceeding on schedule. Phase II will provide a number of benefits to the FDA and Industry users to include increased system availability so users can always submit files and access historical submissions; the elimination of system downtime for planned outages; and an enhanced ESG User Interface for web-based users that eases navigation, eliminates Java dependency, and supports multi-file upload. (XIV.A)</li> </ul>
<b>Communications and Technical Interactions</b>	<ul style="list-style-type: none"> <li>• FDA conducted quarterly meetings with industry on the following dates: December 16, 2015, March 7, June 7, and September 13, 2016. Quarterly meetings participants discussed prospective implementation of the IT plan, progress toward the long term goal, potential impacts that future activities may have on FDA or stakeholders, and potential revisions to the IT plan. (XIV.B.2)</li> </ul>
<b>Metrics and Measures</b>	<ul style="list-style-type: none"> <li>• FDA will report the FY 2016 IT metrics and measures in the PDUFA IT Annual Assessment and post to the FDA webpage by the end of December 2016. (XIV.C.1)</li> </ul>

## FY 2016 Hiring and Placement of New PDUFA V Staff at FDA

In addition to the commitments previously described, FDA committed to provide reporting on the hiring and placement of new staff and use of PDUFA resources to complete this work. The table below shows the FY 2016 status of FDA's hiring and placement for the 129 full-time equivalents (FTEs) agreed to in PDUFA V. At the beginning of PDUFA V, a plan was developed to allocate these FTEs among CDER's super-offices, CBER, and the Office of the Commissioner (OC). FDA has used the same allocation plan to depict the placement of the new staff in the table below. As of FY 2016, 111 of 129 (86 percent) of the FTEs have been hired.

Office	Allocated FTEs	Hired
<b>Enhanced Communication</b>		
CDER/Office of New Drugs	6	6
CBER	1	1
<b>Methods for Meta-analysis</b>		
CDER/Office of New Drugs	4	2
CDER/Office of Translational Sciences	4	3
CBER	2	1
<b>Biomarkers and Pharmacogenomics</b>		
CDER/Office of New Drugs	3	3
CDER/Office of Translational Sciences	10	10
CBER	2	2
<b>Use of Patient-Reported Outcomes</b>		
CDER/Office of New Drugs	10	7
CDER/Office of Translational Sciences	5	4
CBER	2	1
<b>Development of Drugs for Rare Disease</b>		
CDER/Office of New Drugs	5	5
CBER	1	1
<b>Benefit-Risk and Patient-Focused Drug Development</b>		
CDER/Office of New Drugs	4	3
CDER/Office of Strategic Programs	7	3
OC/Office of Health and Constituent Affairs	0	0
CBER	2	1
<b>Standardize and Integrate REMS into the Health Care System</b>		
CDER/Office of New Drugs	3	3
CDER/Office of Surveillance and Epidemiology	5	5
CDER/Office of Regulatory Policy	2	2
CDER/Office of the Center Director	1	1
<b>Electronic Submissions and Data Standards</b>		
CDER/Office of Translational Sciences	4	4
CDER/Office of Strategic Programs	6	5
<b>Review Program Data and Systems Upgrades</b>		
CDER/Office of Strategic Programs	3	2

Office	Allocated FTEs	Hired
<b>PDUFA V Total Direct FTEs</b>	<b>92</b>	<b>75</b>
PDUFA V Indirect FTEs Allocations		
CDER	33	33
CBER	4	3
OC	0	0
<b>TOTAL PDUFA V FTEs</b>	<b>129</b>	<b>111</b>

## Additional PDUFA V Review Program Reporting

### Independent Assessment of the Program

One of the key features of PDUFA V is the Program for NME NDAs and original BLAs, which involves more interaction between the FDA review team and the applicant during review of the marketing application. To understand the Program's impact on NME NDA and original BLA reviews, FDA contracted with an independent firm to evaluate the Program. The Statement of Work for this effort was published for comment on FDA's website, and the contract was awarded to Eastern Research Group (ERG). ERG is responsible for evaluating each interaction between FDA and an applicant by examining documents from both parties and by analyzing events in the review process as they occur or soon thereafter. After FDA takes action on a Program application, ERG also conducts interviews with the applicant and the FDA review team to identify best practices and opportunities for improvement of the Program. Two assessments of the Program will be published during PDUFA V: an interim assessment was published March 31, 2015, and a final assessment was published<sup>42</sup> on December 9, 2016. Section 104 of FDASIA further requires FDA to report on the status of the independent assessment of the Program in this annual PDUFA performance report.

FDA received a total of 56 applications (36 NME NDAs and 20 BLAs) for review in the Program in FY 2013. Of these applications, 40 were approved, 3 were withdrawn after filing by the applicant, and 13 received a complete response. FDA received 57 applications (38 NME NDAs and 19 BLAs) for review in the Program during FY 2014. Of these applications, 49 were approved, 2 were withdrawn after filing by the applicant, and 6 received a complete response. FDA received 62 applications (39 NME NDAs and 23 BLAs) for review in the Program during FY 2015. Of these applications, 46 were approved, 1 was withdrawn after filing by the applicant, and 14 received a complete response. A single remaining application was still pending FDA first action at the end of FY 2016. FDA received 43 applications (25 NME NDAs and 18 BLAs) for review in the Program during FY 2016. Of these applications, 4 were approved, 1 received a complete response, and 38 were pending within the PDUFA goal by September 30, 2016. For a complete review of Program performance, please see Appendices A and B.

<sup>42</sup> [www.fda.gov/ForIndustry/UserFees/PrescriptionDrugUserFee/ucm327030.htm](http://www.fda.gov/ForIndustry/UserFees/PrescriptionDrugUserFee/ucm327030.htm)

In the first 4 years of the Program, ERG has evaluated numerous interactions between FDA and applicants, including 182 pre-submission meetings, 181 mid-cycle communications, and 156 late-cycle meetings. For the 179 applications that received a first-cycle FDA action by September 30, 2016, ERG also conducted 155 post-action interviews with applicants and 164 with FDA review teams.

## Program Quality Metrics

The tables below provide information on FY 2015 and FY 2016 applications that had a completed first action reviewed under the Program as of September 30, 2016. These counts capture the Program milestones completed for applications received in the listed fiscal year. Metrics for applications received in FY 2016 will be updated in the FY 2017 PDUFA Performance Report and will include FY 2016 and 2015 data.

Quality System Metric	FY 2014	FY 2015	FY 2016*
Applications Filed with a First Action	54	61	5
Pre-NDA/BLA Meetings Held	42	51	4
Applications with Agreement on Complete Application	38	46	5
Applications with Agreement on Late Component Submission	23	21	1
74-Day Letters Issued	54	61	5
Mid-Cycle Communications	53	61	5
Primary Reviews Completed	547	428	35
Secondary Reviews Completed	196	158	21
Late Cycle Meeting Packages	48	59	4
Late Cycle Meetings Held	46	58	4
Discipline Review Letters Issued	1	2	0

\*FY 2016 data are preliminary.

## Disciplines Referenced in Discipline Review Letters\*

	FY 2015	FY 2016**
Clinical	2	0
Clinical Pharmacology	0	0
Nonclinical	0	0
Quality	2	0
Statistical	0	0

\* More than one discipline may be referenced in a single discipline review letter.

\*\* FY 2016 data are preliminary.

## Appendices

---

### Appendix A: Final FY 2015 Cohort Performance Detail

The following tables detail the final performance for the FY 2015 cohort of submissions. These data include the number of submissions reviewed *on time* (acted on by the PDUFA goal date) or *overdue* (acted on past goal or pending past the goal date) and the final *percent on time* (final performance with no actions pending within the PDUFA goal date). The performance data presented here have been updated from the preliminary performance information reported in the FY 2015 PDUFA Performance Report.

#### Review Goal Performance

##### Products Reviewed Under PDUFA V NME Review Program

The table below represents NME NDAs and original BLAs that were reviewed under the PDUFA V NME NDA and Original BLA Program. Applications that were received as NME NDAs may not retain that status upon final action. For example, this can occur when an applicant submits two separate applications for the same NME at the same time or a second application while the first application is still under review. Both applications would be reviewed under the Program, though upon approval of either application as an NME, the second one would no longer be considered an NME. However, since both applications were reviewed under the Program, they are included in this table for Program analysis. In addition, although the Program only applies to NME NDAs and original BLAs, there is the potential that when there are multiple applications for the same NME, the second NME application could convert to an efficacy supplement upon approval of the first NME application. Because these applications would be reviewed under the Program, they are included as efficacy supplements in the table below. Furthermore, some applications that were submitted as original BLAs under existing FDA guidance may not be considered novel products to which the Program is targeted. In such cases, these original BLAs were not reviewed in the Program. For the reasons described in this paragraph, the figures in the table below may differ from the figures provided under the original application counts used for performance goal tracking elsewhere in this report.

There are no performance goals associated specifically with the Program, though each Program application falls under other performance goals according to its application type. As of September 30, 2016, 95 percent of FY 2015 cohort applications in the Program were reviewed within their PDUFA goal timelines, and one additional application is pending within goal.

##### Products Reviewed Under PDUFA V Program

Application Type (Final Designation)	Filed	On Time	Overdue	Pending Within Goal
Priority NDAs and BLAs <sup>†</sup>	27	25	2	0
Standard NDAs and BLAs	33	32	0	1
Priority Efficacy Supplements*	0	0	0	0
Standard Efficacy Supplements*	2	2	0	0
<b>Total Program Performance</b>	<b>62</b>	<b>59</b>	<b>2</b>	<b>1</b>

\* Some applications that are submitted as NME NDAs may be considered efficacy supplements at the time of approval.

### Original Applications

Original Application Type	Performance Goal: Act on 90 Percent within	Filed	On Time	Overdue	Percent On Time
Priority NMEs & BLAs	6 months of filing date	25	23	2	92%
Standard NMEs & BLAs	10 months of filing date	32	32	0	100%
Priority Non-NME NDAs	6 months	9	9	0	100%
Standard Non-NME NDAs	10 months	84	80	4	95%

### Resubmitted Applications

Resubmitted Application Type	Performance Goal	Filed	On Time	Overdue	Percent On Time
Class 1	Act on 90 percent within 2 months	7	7	0	100%
Class 2	Act on 90 percent within 6 months	37	36	1	97%

### Efficacy Supplements

Efficacy Supplement Type	Performance Goal	Filed	On Time	Overdue	Percent On Time
Priority	Act on 90 percent within 6 months	52	49	3	94%
Standard	Act on 90 percent within 10 months	136	129	7	95%

### Resubmitted Efficacy Supplements

Resubmitted Efficacy Supplement Type	Performance Goal	Received	On Time	Overdue	Percent On Time
Class 1	Act on 90 percent within 2 months	0	0	0	--
Class 2	Act on 90 percent within 6 months	11	7	4	64%

### Manufacturing Supplements

Manufacturing Supplement Type	Performance Goal	Filed	On Time	Overdue	Percent On Time
Prior Approval Required	Act on 90 percent within 4 months	765	715	50	93%
Prior Approval Not Required	Act on 90 percent within 6 months	1,614	1,544	70	96%



## Procedural and Processing Goal Performance

### Meeting Management

Type	Performance Goal	Received*	On Time	Overdue	Percent On Time
Type A Meeting Requests	Respond to 90 percent within 14 days	121	116	5	96%
Type B Meeting Requests	Respond to 90 percent within 21 days	1,664	1,513	151	91%
Type C Meeting Requests	Respond to 90 percent within 21 days	1,237	1,070	167	86%
Type A Meetings Scheduled	Schedule 90 percent within 30 days	107	68	39	64%
Type B Meetings Scheduled	Schedule 90 percent within 60 days	1,204	862	342	72%
Type C Meetings Scheduled	Schedule 90 percent within 75 days	603	485	118	80%
Type B Written Response	Respond to 90 percent within 60 days	382	291	91	76%
Type C Written Response	Respond to 90 percent within 75 days	546	440	106	81%
Meeting Minutes	Issue 90 percent within 30 days	1,517	1,355	162	89%

\* Not all meeting requests are granted; therefore, the number of meetings scheduled may differ from the number of meeting requests received. Not all scheduled meetings are held; therefore, the number of meeting minutes may differ from the number of meetings scheduled.

### Responses to Clinical Holds

Performance Goal	Received	On Time	Overdue	Percent On Time
Respond to 90 percent within 30 days	161	150	11	93%

### Major Dispute Resolutions

Performance Goal	Responses*	On Time	Overdue	Percent On Time
Respond to 90 percent within 30 days	15	14	1	93%

\* This figure represents the number of FDA-generated 30-day responses to requests for review that have been received. It is not representative of the number of unique appeals received that have been reviewed, as there may be more than one response to an original appeal.

### Special Protocol Assessments

Performance Goal	Received	On Time	Overdue	Percent On Time
Respond to 90 percent within 45 days	231	222	9	96%

### Special Protocol Assessment Resubmissions

SPAs with Resubmissions	Applications with 1 Resubmission	Applications with 2 Resubmissions	Applications with 3 Resubmissions	Total Resubmissions
47	42	5	0	52

### Drug/Biological Product Proprietary Names

Submission Type	Performance Goal	Received	On Time	Overdue	Percent On Time
Submitted During IND Phase	Review 90 percent within 180 days	178	178	0	100%
Submitted with NDA/BLA	Review 90 percent within 90 days	213	212	1	100%

### First-Cycle Filing Review Notifications

Notification Type	Performance Goal	Filed	On Time	Overdue	Percent On Time
NDA's and BLA's	Act on 90 percent within 74 days	149	143	6	96%
Efficacy Supplements	Act on 90 percent within 74 days	127	119	8	94%

### Notification of Planned Review Timelines

Application Type	Applications Filed*	In 74-Day Letter	Not In 74-Day Letter	Percent In 74-Day Letters
NDA's and BLA's	149	149	0	100%
Efficacy Supplements	127	126	1	99%

\* The number of original applications filed in any given year may not match the number of first-cycle notifications due to the status of an application at the time the data are reported.

## Appendix B: Preliminary FY 2016 Cohort Performance Detail

The following detailed performance information for FY 2016 cohort submissions includes the number of submissions filed, reviewed *on time* (acted on by the PDUFA goal date), and *overdue* (acted on past goal or pending past the goal date). The number of submissions not yet acted on but still pending within the PDUFA goal date (*pending within goal*) is also provided, along with the highest possible percent of reviews that may be completed on time.

### Review Goal Performance

#### Products Reviewed Under PDUFA V NME Review Program

The table below represents NME NDAs and original BLAs that were reviewed under the PDUFA V NME NDA and Original BLA Program. Applications that were received as NME NDAs may not retain that status upon final action. For example, this can occur when an applicant submits two separate applications for the same NME at the same time or while the first application is still under review. Both applications would be reviewed under the Program, though upon approval of either application as an NME, the second one would no longer be considered an NME. However, since both applications were reviewed under the Program, they are included in this table for Program analysis. In addition, although the Program only applies to NME NDAs and original BLAs, there is the potential that when there are multiple applications for the same NME, the second NME application could convert to an efficacy supplement upon approval of the first NME application. Because these applications would be reviewed under the Program, they are included as efficacy supplements in the table below. Furthermore, some applications that were submitted as original BLAs under existing FDA guidance may not be considered novel products to which the Program is targeted. In such cases, these original BLAs were not reviewed in the Program. For the reasons described in this paragraph, the figures in the table below may differ from the figures provided under the original application counts used for performance goal tracking elsewhere in this report.

There are no performance goals associated specifically with the Program, though each Program application falls under other performance goals according to its application type. As of September 30, 2016, all FY 2016 cohort applications in the Program are being reviewed within their PDUFA goal timelines.

#### Products Reviewed Under PDUFA V Program

Application Type (Final Designation)	Filed	On Time	Overdue	Pending Within Goal
Priority NDAs and BLAs	22	5	0	17
Standard NDAs and BLAs	21	0	0	21
NDAs and BLAs Review Priority Undesignated*	0	--	--	--
Priority Efficacy Supplements <sup>†</sup>	0	0	0	0
Standard Efficacy Supplements <sup>†</sup>	0	0	0	0
Efficacy Supplements Review Priority Undesignated*	0	--	--	--
<b>Total Program Performance</b>	<b>43</b>	<b>5</b>	<b>0</b>	<b>38</b>

\* These applications have not reached the 60-day filing date and have not yet received a review priority designation.

† Some applications that are submitted as NME NDAs may be considered efficacy supplements at the time of approval.

### Original Applications

Application Type	Performance Goal: Act on 90 percent within	Filed	On Time	Overdue	Pending Within Goal	Current Percent On Time	Highest Possible Percent On Time
Priority NMEs & BLAs	6 months of filing date	23	5	0	18	100%	100%
Standard NMEs & BLAs	10 months of filing date	26	0	0	26	--	100%
Priority Non-NME NDAs	6 months	10	3	2	5	60%	80%
Standard Non-NME NDAs	10 months	71	8	1	62	89%	99%
Review Priority Undesignated*	To Be Determined	2	--	--	--	--	--

\* These applications have not reached the 60-day filing date and have not yet received a review priority designation.

### Resubmitted Applications

Resubmitted Application Type	Performance Goal: Act on 90 percent within	Received	On Time	Overdue	Pending Within Goal	Current Percent On Time	Highest Possible Percent On Time
Class 1	2 months	5	5	0	0	100%	100%
Class 2	6 months	32	19	0	13	100%	100%

### Efficacy Supplements

Efficacy Supplement Type	Performance Goal: Act on 90 percent within	Filed	On Time	Overdue	Pending Within Goal	Current Percent On Time	Highest Possible Percent On Time
Priority	6 months	45	25	0	20	100%	100%
Standard	10 months	135	33	3	99	92%	98%
Review Priority Undesignated*	To Be Determined	15	--	--	--	--	

\* These applications have not reached the 60-day filing date and have not yet received a review priority designation.

### Resubmitted Efficacy Supplements

Resubmitted Efficacy Supplement Type	Performance Goal: Act on 90 percent within	Received	On Time	Overdue	Pending Within Goal	Current Percent On Time	Highest Possible Percent On Time
Class 1	2 months	3	2	0	1	100%	100%
Class 2	6 months	11	7	1	3	88%	91%

## Manufacturing Supplements

Manufacturing Supplement Type	Performance Goal: Act on 90 percent within	Filed	On Time	Overdue	Pending Within Goal	Current Percent On Time	Highest Possible Percent On Time
Prior Approval Required	4 months	823	560	25	238	96%	97%
Prior Approval Not Required	6 months	1,473	782	11	680	99%	99%
Review Priority Undesignated	To Be Determined	0	--	--	--	--	--

## Procedural and Processing Goal Performance

### Meeting Management

Type	Performance Goal: 90 percent within	Received*	On Time	Overdue	Pending Within Goal	Current Percent On Time	Highest Possible Percent On Time
Type A Meeting Requests <sup>†</sup>	14 Days	202	121	27	54	82%	87%
Type B Meeting Requests	21 Days	1,697	1,538	128	31	92%	92%
Type C Meeting Requests	21 Days	1,318	1,146	150	22	88%	89%
Type A Meetings Scheduled <sup>†</sup>	30 Days	191	82	41	68	67%	79%
Type B Meetings Scheduled	60 Days	1,163	770	335	58	70%	71%
Type C Meetings Scheduled	75 Days	577	423	128	26	77%	78%
Type B Written Response	60 Days	454	323	81	50	80%	82%
Type C Written Response	75 Days	625	438	79	108	85%	87%
Meeting Minutes	30 Days	1,524	963	89	472	92%	94%

\* Not all meeting requests are granted; therefore, the number of meetings scheduled may differ from the number of meeting requests received. Not all scheduled meetings are held; therefore, the number of meeting minutes may differ from the number of meetings scheduled.

<sup>†</sup> Some meeting requests and subsequent scheduling of meetings are for requests where the type cannot be initially determined. There were 142 meetings (71 requests and 71 scheduling) coded as undesignated in the database as of September 30, 2016. These undesignated meetings are included as Type A meetings in the table above. Performance in all categories will change once designations are made for these requests and scheduling and will be updated in the FY 2017 PDUFA Performance Report.

### Responses to Clinical Holds

Performance Goal	Received	On Time	Overdue	Pending Within Goal	Current Percent On Time	Highest Possible Percent On Time
Respond to 90 percent within 30 days	231	208	12	11	95%	95%

## Major Dispute Resolutions

Performance Goal	Responses*	On Time	Overdue	Pending Within Goal	Current Percent On Time	Highest Possible Percent On Time
Respond to 90 percent within 30 days	15	11	0	4	100%	100%

\* This figure represents the number of FDA-generated 30-day responses to requests for review that have been received. It is not representative of the number of unique appeals received that have been reviewed, as there may be more than one response to an original appeal.

## Special Protocol Assessments

Performance Goal	Received	On Time	Overdue	Pending Within Goal	Current Percent On Time	Highest Possible Percent On Time
Respond to 90 percent within 45 days	214	175	8	31	96%	96%

## Special Protocol Assessment Resubmissions

SPAs with Resubmissions	Applications with 1 Resubmission	Applications with 2 Resubmissions	Applications with 3 Resubmissions	Total Resubmissions
35	32	2	1	39

## Drug/Biological Product Proprietary Names

Submission Type	Performance Goal: Review 90 percent within	Received	On Time	Overdue	Pending Within Goal	Current Percent On Time	Highest Possible Percent On Time
Proprietary Names Submitted During IND Phase	180 days	158	103	0	55	100%	100%
Proprietary Names Submitted with NDA/BLA	90 days	204	164	1	39	99%	100%

## First-Cycle Filing Review Notifications

First-Cycle Filing Review Notification Type	Performance Goal: Act on 90 percent within	Filed	On Time	Overdue	Pending Within Goal	Current Percent On Time	Highest Possible Percent On Time
NDA's and BLA's	74 days	132	100	6	26	94%	95%
Efficacy Supplements	74 days	110	86	6	18	93%	95%

### Notification of Planned Review Timelines

Application Type	Applications Filed*	In 74 Day Letter	Not In 74 Day Letter	Pending <sup>†</sup>	Percent In 74 Day Letters	Highest Possible Percent In Letters
NDA and BLAs	132	106	0	26	100%	100%
Efficacy Supplements	110	88	0	22	100%	100%

\* The number of original applications filed in any given year may not match the number of first-cycle notifications due to the status of an application at the time the data are reported. Numbers are updated as appropriate in later fiscal year reports.

<sup>†</sup> Pending includes only those notification commitments that have not been issued and are within 74 days.





## Appendix C: List of Approved Applications

This appendix includes the detailed review histories of the NDA and BLA submissions approved under PDUFA V in FY 2016. Approvals are grouped by priority designation and submission year and listed in order of total approval time. Approval time is presented in months and includes each review cycle's time with FDA, time with the sponsor, and the total time on that application.

Review histories of NDA and BLA submissions approved prior to FY 2016 can be found in the appendices of the earlier PDUFA Performance Reports available at: [www.fda.gov/AboutFDA/ReportsManualsForms/Reports/UserFeeReports/PerformanceReports/ucm2007449.htm](http://www.fda.gov/AboutFDA/ReportsManualsForms/Reports/UserFeeReports/PerformanceReports/ucm2007449.htm)

**Please note:** When determining total time, FDA calculates the number of months and rounds to the nearest tenth. Therefore, when cycle times are added, rounding discrepancies can occur.

Because months consist of varying numbers of days, FDA uses the average number of days in a month to calculate review time in months. Therefore, a submission may appear overdue even though it was approved on the goal date. For example, the submission *ZEPATIER (Elbasvir / Grazoprevir)* on page C-3 was received on 05/28/2015 and had an 8-month review goal date of 1/28/2016 as it was reviewed under the PDUFA V Program. FDA approved the submission on the goal date, but because FDA uses the average number of days in a month to calculate months, the time taken to review the submission is reported as 8.1 months and the review appears overdue.

### Terms and Coding Used in Tables

Action Codes:

AE = Approvable

AP = Approved

CR = Complete Response

NA = Not Approvable

TA = Tentative Approval

WD = Withdrawn

▲ Denotes Class 1 Resubmission (2 month review-time goal)

△ Denotes Class 2 Resubmission (6 month review-time goal)

◇ Expedited review and TA of an NDA by FDA for fixed dose combinations and co-packaged antiretroviral medications as part of the President's Emergency Plan for AIDS Relief (PEPFAR)

◆ Application reviewed under the PDUFA V Program with review goals starting from the 60-day filing date, rather than the submission date

# Major amendment was received, which extended the action goal date by 3 months [Note: Under PDUFA V, a major amendment can be received anytime during the review cycle and extend the goal date by 3 months. If the review cycle occurred prior to FY 2013, the major amendment must have been received within 3 months of the action due date to extend the action goal date by 3 months.



**Table 1**  
**FY 2016 Priority NDA and BLA Approvals (by FY of receipt)**

Proprietary Name (established name)	Applicant	NME (Y/N)	Review Cycle	Cycle Time (mos.)	Cycle Result	Total Time (mos.)	Goal Met
<b>Submitted in FY 2016</b>							
Cabometyx (Cabozantinib)	Exelixis Inc	N	First	4.1	AP	4.1	Y
Tecentriq (Atezolizumab)	Genentech, Inc	Y	First	4.2	AP	4.2	Y♦
Venclexta (Venetoclax)	Abbvie Inc	Y	First	5.4	AP	5.4	Y♦
Vaxchora (Cholera Vaccine Live Oral)	Pax Vax Bermuda Ltd.	Y	First	7.8	AP	7.8	Y♦
Epclusa (Sofosbuvir And Velpatasvir)	Gilead Sciences Inc	Y	First	8.0	AP	8.0	Y♦
<b>Submitted in FY 2015</b>							
Narcan Nasal Spray (Naloxone Hydrochloride)	Adapt Pharma Inc	N	First	4.0	AP	4.0	Y
Darzalex (Daratumumab)	Janssen Biotech, Inc	Y	First	4.3	AP	4.3	Y♦
Ninlaro (Ixazomib)	Millennium Pharmaceuticals Inc	Y	First	4.4	AP	4.4	Y♦
Vistogard (Uridine Triacetate)	Wellstat Therapeutics Corp	N	First	5.1	AP	5.1	Y♦ <sup>43</sup>
Empliciti (Elotuzumab)	Bristol-Myers Squibb Company	Y	First	5.2	AP	5.2	Y♦
Alecensa (Alectinib)	Hoffmann-La Roche Inc	Y	First	5.2	AP	5.2	Y♦
Tagrisso (Osimertinib)	Astrazeneca Pharmaceuticals Lp	Y	First	5.3	AP	5.3	Y♦
Onivyde (Irinotecan Liposome Injection)	Merrimack Pharmaceuticals Inc	N	First	6.0	AP	6.0	Y
Nuplazid (Pimavanserin)	Acadia Pharmaceuticals Inc	Y	First	7.9	AP	7.9	Y♦
Praxbind (Idarucizumab)	Boehringer Ingelheim Pharmaceuticals, Inc	Y	First	7.9	AP	7.9	Y♦
Axumin (Fluciclovine F18)	Blue Earth Diagnostics Ltd	Y	First	8.0	AP	8.0	Y♦

<sup>43</sup> Non-NME NDA reviewed under the PDUFA V Program. At time of receipt, the active ingredient uridine triacetate had never been approved in the USA allowing for NME designation; however at time of approval uridine triacetate had already been approved for marketing in another application, causing this application to lose its NME designation.

Proprietary Name (established name)	Applicant	NME (Y/N)	Review Cycle	Cycle Time (mos.)	Cycle Result	Total Time (mos.)	Goal Met
Defitelio (Defibrotide Sodium)	Jazz Pharmaceuticals Inc	Y	First	8.0	AP	8.0	Y♦
Odefsey (Emtricitabine, Rilpivirine, And Tenofovir Alafenamide)	Gilead Sciences Inc	N	First	8.0	AP	8.0	Y
Zepatier (Elbasvir / Grazoprevir)	Merck Sharp And Dohme Corp	N	First	8.1	AP	8.1	Y
Emend (Aprepitant)	Merck Sharp And Dohme Corp Subsidiary Of Merck And Co Inc	N	First	8.8	AP	8.8	Y#
Strensiq (Asfotase Alfa)	Alexion Pharmaceuticals Inc	Y	First	10.0	AP	10.0	Y#♦
Yondelis (Trabectedin)	Janssen Products LP	Y	First	10.9	AP	10.9	Y#♦
Kanuma (Sebelipase Alfa)	Synageva Biopharma Corp	Y	First	11.0	AP	11.0	Y#♦
Cotellic (Cobimetinib)	Genentech Inc	Y	First	11.0	AP	11.0	Y#♦
Ocaliva (Obeticholic Acid)	Intercept Pharmaceuticals Inc	Y	First	11.0	AP	11.0	Y#♦
Netspot (Kit For The Preparation Of Gallium Ga 68 Dotatate Injection)	Advanced Accelerator Applications USA Inc	Y	First	11.0	AP	11.0	Y#♦
Exondys 51 (Eteplirsen)	Sarepta Therapeutics Inc	Y	First	14.8	AP	14.8	N#♦
Xiidra (Lifitegrast Ophthalmic Solution)	Shire Development LLC	Y	First	7.7	CR	7.7	Y♦
			Sponsor	3.2		10.9	
			Second	5.6	AP	16.5	YΔ
<b>Submitted in FY 2013</b>							
Coagadex (Coagulation Factor X (Human))	Bio Products Laboratory	Y	First	8.0	CR	8.0	Y
			Sponsor	13.6		21.6	
			Second	5.8	AP	27.4	YΔ♦
Photrex Viscous (Riboflavin 5'-Phosphate In 20% Dextran Ophthalmic Solution) 0.146%, Photrex (Riboflavin 5'-Phosphate Ophthalmic	Avedro Inc	N	First	5.9	CR	5.9	Y
			Sponsor	6.5		12.4	

Proprietary Name (established name)	Applicant	NME (Y/N)	Review Cycle	Cycle Time (mos.)	Cycle Result	Total Time (mos.)	Goal Met
Solution) 0.146%			Second	6.0	CR	18.3	YΔ
			Sponsor	6.6		24.9	
			Third	6.0	AP	30.9	YΔ
PROBUPHINE (Buprenorphine Hydrochloride)	Braeburn Pharmaceuticals Inc	N	First	6.0	CR	6.0	Y
			Sponsor	27.9		33.9	
			Second	9.0	AP	42.9	Y#Δ
<b>Submitted in FY 2008</b>							
Bridion (Sugammadex)	Organon Usa Inc A Subsidiary Of Merck And Co Inc	Y	First	9.0	CR	9.0	Y
			Sponsor	52.7		61.7	
			Second	9.0	CR	70.7	Y#Δ
			Sponsor	13.1		83.8	
			Third	6.0	CR	89.8	YΔ
			Sponsor	1.9		91.7	
			Fourth	5.9	AP	97.6	YΔ <sup>44</sup>

<sup>44</sup> This application is a NME NDA that was not reviewed under the PDUFA V Program timeline, which became effective on 10/1/2012.

**Table 2**  
**FY 2016 Standard NDA and BLA Approvals (by FY of receipt)**

Proprietary Name (Established Name)	Applicant	NME (Y/N)	Review Cycle	Cycle Time (mos.)	Cycle Result	Total Time (mos.)	Goal Met
<b>Submitted in FY 2016</b>							
Epaned (Enalapril Maleate)	Silergate Pharmaceuticals Inc	N	First	9.9	AP	9.9	Y
Kyleena (Levonorgestrel- Releasing Intrauterine System)	Bayer Healthcare Pharmaceuticals Inc	N	First	10.0	AP	10.0	Y
Levoleucovorin	Actavis LLC	N	First	10.0	AP	10.0	Y
Stelara (Ustekinumab)	Janssen Biotech Inc	N	First	10.0	AP	10.0	Y
Invokamet Xr (Canagliflozin And Metformin Hydrochloride Extended Release)	Janssen Pharmaceuticals Inc	N	First	10.1	AP	10.1	Y
<b>Submitted in FY 2015</b>							
Otiprio (6% Ciprofloxacin Otic Suspension)	Otonomy Inc	N	First	9.5	AP	9.5	Y
Nexium 24hr (Esomeprazole)	Astrazeneca Lp	N	First	9.6	AP	9.6	Y
Docetaxel Injection	Eagle Pharmaceuticals Inc	N	First	9.8	AP	9.8	Y
Bendeka (Bendamustine Hydrochloride)	Eagle Pharmaceuticals Inc	N	First	9.8	AP	9.8	Y
Viekira Xr (Dasabuvir, Ombitasvir, Paritaprevir, And Ritonavir)	Abbvie Inc	N	First	9.8	AP	9.8	Y
Abacavir And Lamivudine Tablets	Hetero Labs Ltd Unit V	N	First	9.9	TA	9.9	Y <sup>∠</sup>
Enstilar (Calcipotriene And Betamethasone Dipropionate)	Leo Pharma As	N	First	9.9	AP	9.9	Y
Ultravate (Halobetasol Propionate)	Sun Pharmaceutical Industries Inc	N	First	9.9	AP	9.9	Y
Belviq Xr (Lorcaserin Hydrochloride)	Eisai Inc	N	First	9.9	AP	9.9	Y
Stelara (Ustekinumab)	Janssen Biotech Inc	N	First	10.0	AP	10.0	Y
Simvastatin	Rosemont Pharmaceuticals Ltd	N	First	10.0	AP	10.0	Y
Bromsite (Bromfenac Ophthalmic Solution)	Sun Pharma Global Fze	N	First	10.0	AP	10.0	Y
Aczone (Dapsone)	Allergan Inc	N	First	10.0	AP	10.0	Y
Vivlodex (Meloxicam)	Iroko Pharmaceuticals LLC	N	First	10.0	AP	10.0	Y
Cetylev (Acetylcysteine)	Arbor Pharmaceuticals LLC	N	First	10.0	AP	10.0	Y
Seebri Neohaler (Glycopyrrolate)	Novartis Pharmaceuticals Corp	N	First	10.0	AP	10.0	Y
Utibron Neohaler (Indacaterol / Glycopyrrolate)	Novartis Pharmaceuticals Corp	N	First	10.0	AP	10.0	Y

Proprietary Name (Established Name)	Applicant	NME (Y/N)	Review Cycle	Cycle Time (mos.)	Cycle Result	Total Time (mos.)	Goal Met
Belbuca (Buprenorphine)	Endo Pharmaceuticals Inc	N	First	10.0	AP	10.0	Y
Quillichew Er (Methylphenidate Hydrochloride)	Pfizer Inc	N	First	10.0	AP	10.0	Y
Jentaduetto Xr (Linagliptin And Metformin Hydrochloride Extended-Release)	Boehringer Ingelheim Pharmaceuticals Inc	N	First	10.0	AP	10.0	Y
Sernivo (Betamethasone Dipropionate)	Promius Pharma LLC	N	First	10.0	AP	10.0	Y
Steri-Unit (Tetracaine Hydrochloride Ophthalmic Solution)	Alcon Research Ltd	N	First	10.0	AP	10.0	Y
Dyanavel Xr (Amphetamine)	Tris Pharma Inc	N	First	10.0	AP	10.0	Y
Azacitidine	Actavis LLC	N	First	10.0	AP	10.0	Y
Zembrace Symtouch (Sumatriptan)	Dr Reddys Laboratories Ltd	N	First	10.0	AP	10.0	Y
Xeljanz (Tofacitinib)	Pfizer Inc	N	First	10.0	AP	10.0	Y
Otovel (Ciprofloxacin 0.3% And Fluocinolone Acetonide 0.025%)	Laboratorios Salvat Sa	N	First	10.0	AP	10.0	Y
Acticlate Cap (Doxycycline Hyclate)	Aqua Pharmaceuticals	N	First	10.0	AP	10.0	Y
Fycompa (Perampanel)	Eisai Inc	N	First	10.0	AP	10.0	Y
Zenavod (Doxycycline)	Dr Reddys Laboratories Ltd	N	First	10.0	TA	10.0	Y
Akovaz (Ephedrine Sulfate)	Flamel Ireland Limited	N	First	10.0	AP	10.0	Y
Bevespi Aerosphere (Glycopyrrolate And Formoterol Fumarate)	Pearl Therapeutics Inc	N	First	10.0	AP	10.0	Y
Gonitro (Nitroglycerin)	G Pohl Boskamp GmbH And Co Kg	N	First	10.0	AP	10.0	Y
Triferic (Ferric Pyrophosphate Citrate)	Rockwell Medical Inc	N	First	10.0	AP	10.0	Y
Orfadin (Nitisinone)	Swedish Orphan Biovitrum Ab Publ	N	First	10.1	AP	10.1	Y
Lansoprazole Delayed- Release, Orally- Disintegrating Tablets	Dexcel Pharma Technologies Ltd	N	First	10.1	AP	10.1	Y
Dexilant Solutab (Dexlansoprazole Delayed- Release Orally Disintegrating Tablet)	Takeda Pharmaceuticals Usa Inc	N	First	10.1	AP	10.1	Y
Ameluz (Aminolevulinic Acid Hydrochloride)	Biofrontera Bioscience GmbH	N	First	10.1	AP	10.1	Y
Voriconazole	Xellia Pharmaceuticals Aps	N	First	10.1	TA	10.1	Y
Morphabond (Morphine Sulfate)	Inspirion Delivery Technologies LLC	N	First	10.4	AP	10.4	N
Palonosetron Hydrochloride	Exela Pharma Sciences LLC	N	First	10.0	CR	10.0	Y
			Sponsor	3.3		13.3	

Proprietary Name (Established Name)	Applicant	NME (Y/N)	Review Cycle	Cycle Time (mos.)	Cycle Result	Total Time (mos.)	Goal Met
			Second	6.0	TA	19.3	Y△
			Sponsor	3.0		22.3	
			Third	2.0	AP	24.3	Y▲
Adynovate (Antihemophilic Factor (Recombinant), Pegylated)	Baxalta Us Inc	Y	First	11.6	AP	11.6	Y◆
Vonvendi (Von Willebrand Factor (Recombinant))	Baxalta Us Inc	Y	First	11.7	AP	11.7	Y◆
Portrazza (Necitumumab)	Eli Lilly And Company	Y	First	11.7	AP	11.7	Y◆
Cinqair (Reslizumab)	Teva Respiratory LLC	Y	First	11.8	AP	11.8	Y◆
Zurampic (Lesinurad)	Ironwood Pharmaceuticals Inc	Y	First	11.8	AP	11.8	Y◆
Afstyla (Antihemophilic Factor (Recombinant), Single Chain)	Csl Behring Recombinant Facility Ag	Y	First	11.9	AP	11.9	Y◆
Nucala (Mepolizumab)	Glaxosmithkline LLC	Y	First	12.0	AP	12.0	Y◆
Anthim (Obiltoxaximab)	Elusys Therapeutics, Inc	Y	First	12.0	AP	12.0	Y◆
Taltz (Ixekizumab)	Eli Lilly And Company	Y	First	12.0	AP	12.0	Y◆
Fluad (Influenza Vaccine, Adjuvanted)	Seqirus Inc	Y	First	12.0	AP	12.0	Y◆
Veltassa (Patiromer)	Relypsa Inc	Y	First	12.0	AP	12.0	Y◆
Genvoya (Elvitegravir, Cobicistat, Emtricitabine, And Tenofovir Alafenamide)	Gilead Sciences Inc	Y	First	12.0	AP	12.0	Y◆
Uptravi (Selexipag)	Actelion Pharmaceuticals Ltd	Y	First	12.0	AP	12.0	Y◆
Descovy (Emtricitabine And Tenofovir Alafenamide)	Gilead Sciences Inc	N	First	12.0	AP	12.0	Y◆ <sup>45</sup>
Cuvitru (Immune Globulin Subcutaneous (Human), 20% Solution)	Baxalta Us Inc	Y	First	12.0	AP	12.0	Y◆
Adlyxin (Lixisenatide)	Sanofi-Aventis Us LLC	Y	First	12.1	AP	12.1	Y◆
Rayaldee (Calcifediol)	Opko Ireland Global Holdings Ltd	N	First	10.0	CR	10.0	Y
			Sponsor	0.8		10.8	
			Second	1.9	AP	12.7	Y△
Readi-Cat 2 And Readi-Cat 2 Smoothie (Barium Sulfate)	Bracco Diagnostics Inc	N	First	12.9	AP	12.9	Y#

<sup>45</sup> Non-NME NDA reviewed under the PDUFA V Program. At time of receipt, the active ingredient tenofovir alafenamide had never been approved in the United States allowing for NME designation; however at time of approval tenofovir alafenamide had already been approved for marketing in another application, causing this application to lose its NME designation.



Proprietary Name (Established Name)	Applicant	NME (Y/N)	Review Cycle	Cycle Time (mos.)	Cycle Result	Total Time (mos.)	Goal Met
Syndros (Dronabinol)	Insys Development Co Inc	N	First	13.0	AP	13.0	Y#
E-Z-Hd (Barium Sulfate)	Bracco Diagnostics Inc	N	First	13.0	AP	13.0	Y#
Relistor (Methylnaltrexone Bromide)	Salix Pharmaceuticals Inc	N	First	13.0	AP	13.0	Y#
Qbrelis (Lisinopril)	Silvergate Pharmaceuticals Inc	N	First	13.0	AP	13.0	Y#
Palonosetron injection	Fresenius Kabi Usa LLC	N	First	10.0	CR	10.0	Y
			Sponsor	1.4		11.4	
			Second	1.6	TA	13.0	Y▲
Kovanaze (Tetracaine Hcl And Oxymetazoline Hcl)	St Renatus LLC	N	First	13.1	AP	13.1	Y#
Evomela (Captisol-Enabled Melphalan Hcl For Injection)	Spectrum Pharmaceuticals Inc	N	First	10.0	CR	10.0	Y
			Sponsor	0.6		10.6	
			Second	4.0	AP	14.6	Y△
Briviact (Brivaracetam) <sup>46</sup>	UCBInc	Y	First	14.8	AP	14.8	Y#◆
Zinbryta (Daclizumab)	Biogen Inc	Y	First	15.0	AP	15.0	Y#◆
IDELVION (Coagulation Factor IX (Recombinant), Albumin Fusion Protein)	CSL Behring Recombinant Facility AG	Y	First	15.0	AP	15.0	Y#◆
Briviact (Brivaracetam) <sup>11</sup>	UCB Inc	N	First	15.0	AP	15.0	Y#◆
Briviact (Brivaracetam) <sup>11</sup>	UCB Inc	N	First	15.0	AP	15.0	Y#◆
Kovaltry (Antihemophilic Factor (Recombinant), Full Length)	Bayer Healthcare LLC	Y	First	15.0	AP	15.0	Y#◆
Xtampza Er (Oxycodone)	Collegium Pharmaceutical Inc	N	First	10.8	TA	10.8	N
			Sponsor	3.7		14.5	
			Second	2.0	AP	16.5	Y▲
TROXYCA ER (Oxycodone Hydrochloride And Naltrexone Hydrochloride)	PFIZER INC	N	First	20.0	AP	20.0	N#
<b>Submitted in FY 2014</b>							
Aristada (Aripiprazole Lauroxil)	Alkermes Inc	Y	First	13.5	AP	13.5	N◆
Imlygic (Tolimogene Laherparepvc)	Amgen Inc	Y	First	15.0	AP	15.0	Y#◆

<sup>46</sup> These three NDAs are for the same moiety but different dosage forms (tablet vs. injection vs. solution) and only one retains the NME designation upon approval; in this case, the NDA for the tablet form retained the NME designation.

Proprietary Name (Established Name)	Applicant	NME (Y/N)	Review Cycle	Cycle Time (mos.)	Cycle Result	Total Time (mos.)	Goal Met
Dexmedetomidine Hydrochloride	Hq Specialty Pharma Corp	N	First	10.0	CR	10.0	Y
			Sponsor	1.3		11.3	
			Second	6.0	AP	17.3	YΔ
Smoflipid (Lipid Injectable Emulsion)	Fresenius Kabi Usa LLC	N	First	21.6	AP	21.6	N#
Paricalcitol	Accord Healthcare Inc	N	First	10.0	CR	10.0	Y
			Sponsor	6.2		16.2	
			Second	6.0	AP	22.2	YΔ
Caspofungin Acetate	Fresenius Kabi Usa LLC	N	First	9.8	CR	9.8	Y
			Sponsor	7.2		17.0	
			Second	5.8	TA	22.8	YΔ
Onzetra Xsail (Sumatriptan)	Avanir Pharmaceuticals	N	First	10.0	CR	10.0	Y
			Sponsor	5.3		15.3	
			Second	8.8	AP	24.1	Y#Δ
Palonosetron Hydrochloride	Exela Pharma Sciences LLC	N	First	10.0	CR	10.0	Y
			Sponsor	3.3		13.3	
			Second	6.0	AP	19.3	YΔ
			Sponsor	3.0		22.3	
			Third	2.0	AP	24.3	Y▲
Basaglar (Insulin Glargine)	Eli Lilly And Co	N	First	10.0	TA	10.0	Y
			Sponsor	13.9		23.9	
			Second	2.0	AP	25.9	Y▲
Byvalson (Nebivolol / Valsartan)	Forest Laboratories LLC	N	First	10.0	CR	10.0	Y
			Sponsor	9.2		19.2	
			Second	8.2	AP	27.4	Y#Δ
<b>Submitted in FY 2013</b>							
Tigecycline	Fresenius Kabi USA LLC	N	First	9.9	CR	9.9	Y
			Sponsor	12.0		21.9	
			Second	5.9	TA	27.8	YΔ
Provayblue (Methylene Blue)	Provepharm Sas	N	First	12.9	CR	12.9	Y#
			Sponsor	12.0		24.9	

Proprietary Name (Established Name)	Applicant	NME (Y/N)	Review Cycle	Cycle Time (mos.)	Cycle Result	Total Time (mos.)	Goal Met
			Second	6.0	AP	30.9	YΔ
Esmolol Hydrochloride	HQ Specialty Pharma Corp	N	First	9.6	TA	9.6	Y
			Sponsor	17.8		27.4	
			Second	6.0	AP	33.4	YΔ
Bortezomib	Fresenius Kabi USA LLC	N	First	10.0	CR	10.0	Y
			Sponsor	12.0		22.0	
			Second	6.0	CR	28.0	YΔ
			Sponsor	1.6		29.6	
			Third	5.9	TA	35.5	YΔ
Adzenys Xr-Odt (Release Orally Disintegrating Tablets)	Neos Therapeutics	N	First	8.9	CR	8.9	Y
			Sponsor	22.1		31.0	
			Second	6.1	AP	37.1	YΔ
Yosprala (Aspirin 81 Mg/Omeprazole 40 Mg, And Aspirin 325 Mg/Omeprazole 40 Mg)	Aralez Pharmaceuticals Trading Dac	N	First	13.0	CR	13.0	Y#
			Sponsor	2.2		15.2	
			Second	5.6	CR	20.8	YΔ
			Sponsor	14.9		35.7	
			Third	6.1	AP	41.8	YΔ
<b>Submitted in FY 2012</b>							
Acetaminophen Injection	Fresenius Kabi Usa LLC	N	First	9.9	CR	9.9	Y
			Sponsor	21.2		31.1	
			Second	6.0	AP	37.1	YΔ
Zoledronic Acid	Hospira Inc	N	First	10.0	CR	10.0	Y
			Sponsor	1.3		11.3	
			Second	5.8	TA	17.1	YΔ
			Sponsor	28.0		45.1	
			Third	1.9	AP	47.0	Y▲
Palonosetron Hydrochloride	Dr Reddys Laboratories Ltd	N	First	10.0	TA	10.0	YΔ
			Sponsor	34.0		44.0	
			Second	6.0	AP	50.0	Y▲
<b>Submitted in FY 2010</b>							

Proprietary Name (Established Name)	Applicant	NME (Y/N)	Review Cycle	Cycle Time (mos.)	Cycle Result	Total Time (mos.)	Goal Met
Rosuvastatin Zinc Tablets	Watson Laboratories Inc	N	First	12.6	TA	12.6	Y#
			Sponsor	21.3		33.9	
			Second	6.1	CR	40.0	YΔ
			Sponsor	21.0		61.0	
			Third	6.0	TA	67.0	YΔ
RUBY-FILL (Rubidium Rb-82 Generator 85-115mci)	Jubilant Draximage Inc	N	First	53.7	CR	53.7	N
			Sponsor	12.4		66.1	
			Second	9.1	AP	75.2	Y#Δ
<b>Submitted in FY 2009</b>							
Sustol (Granisetron)	Heron Therapeutics Inc	N	First	9.9	CR	9.9	Y
			Sponsor	30.4		40.3	
			Second	6.0	CR	46.3	YΔ
			Sponsor	27.7		74.0	
			Third	12.8	AP	86.8	NΔ

## Appendix D: Filed Application Numbers by Review Division

The tables below and on the pages that follow show the number of applications filed in FY 2016 for various application types and review designations broken out by review division. This new reporting for PDUFA V is required under section 104 of FDASIA.

### Original Applications Filed in FY 2016 by Review Division/Office

Review Division/Office	Priority NDAs	Standard NDAs	Priority BLAs	Standard BLAs	Undesignated Original Applications
<b>CDER Review Divisions</b>					
Division of Anesthesia, Analgesia, and Addiction Products	2	9	0	0	0
Division of Anti-Infective Products	3	3	1	0	0
Division of Antiviral Products	4	6	0	0	0
Division of Bone, Reproductive, and Urologic Products	0	8	0	1	0
Division of Cardiovascular and Renal Products	0	4	0	0	0
Division of Dermatology and Dental Products	0	5	1	1	0
Division of Gastroenterology and Inborn Errors Products	1	7	1	1	0
Division of Hematology Products	2	6	0	1	2
Division of Medical Imaging Products	0	2	0	0	0
Division of Metabolism and Endocrinology Products	1	10	0	0	0
Division of Neurology Products	3	2	1	0	0
Division of Nonprescription Drug Products	0	3	0	0	0
Division of Oncology Products 1 (DOP1)	3	4	1	0	0
Division of Oncology Products 2 (DOP2)	2	5	2	0	0
Division of Psychiatry Products	1	1	0	0	0
Division of Pulmonary, Allergy, and Rheumatology Products	0	7	0	3	0
Division of Transplant and Ophthalmology Products	2	2	0	0	0
<i>CDER Totals</i>	<i>24</i>	<i>84</i>	<i>7</i>	<i>7</i>	<i>2</i>

## Original Applications Filed in FY 2016 by Review Division/Office (Continued)

Review Division/Office	Priority NDAs	Standard NDAs	Priority BLAs	Standard BLAs	Undesignated Original Applications
<b>CDER Review Divisions</b>					
Office of Blood Research and Review	0	0	1	5	0
Office of Cellular Tissue and Gene Therapies	0	0	0	1	0
Office of Vaccines Research and Review	0	0	1	0	0
<i>CDER Totals</i>	<i>0</i>	<i>0</i>	<i>2</i>	<i>6</i>	<i>0</i>
<b>FDA Totals</b>	<b>24</b>	<b>84</b>	<b>9</b>	<b>13</b>	<b>2</b>

## Efficacy Supplements Filed in FY 2016 by Review Division/Office

Review Division/Office	Priority Efficacy Supplements	Standard Efficacy Supplements	Undesignated Efficacy Supplements
<b>CDER Review Divisions</b>			
Division of Anesthesia, Analgesia, and Addiction Products	2	9	1
Division of Anti-Infective Products	5	1	0
Division of Antiviral Products	9	8	0
Division of Bone, Reproductive, and Urologic Products	0	8	2
Division of Cardiovascular and Renal Products	3	1	0
Division of Dermatology and Dental Products	0	5	0
Division of Gastroenterology and Inborn Errors Products	0	5	1
Division of Hematology Products	9	6	3
Division of Medical Imaging Products	1	4	1
Division of Metabolism and Endocrinology Products	0	22	1
Division of Neurology Products	0	8	0
Division of Nonprescription Drug Products	0	3	0
Division of Oncology Products 1 (DOP1)	4	5	0
Division of Oncology Products 2 (DOP2)	5	10	3
Division of Psychiatry Products	2	6	1

Review Division/Office	Priority Efficacy Supplements	Standard Efficacy Supplements	Undesignated Efficacy Supplements
Division of Pulmonary, Allergy, and Rheumatology Products	4	8	2
Division of Transplant and Ophthalmology Products	1	1	0
<i>CDER Totals</i>	<i>45</i>	<i>110</i>	<i>15</i>
<b>CBER Review Offices</b>			
Office of Blood Research and Review	0	8	0
Office of Cellular Tissue and Gene Therapies	0	0	0
Office of Vaccines Research and Review	0	17	0
<i>CBER Totals</i>	<i>0</i>	<i>25</i>	<i>0</i>
<b>FDA Totals</b>	<b>45</b>	<b>135</b>	<b>15</b>

### Submissions with Special Designations Filed in FY 2016 by Review Division/Office

Review Division/Office	Accelerated Approval	Fast Track Products	Orphan Designations	Breakthrough Designations*
<b>CDER Review Divisions</b>				
Division of Anesthesia, Analgesia, and Addiction Products	0	2	0	1
Division of Anti-Infective Products	0	3	1	1
Division of Antiviral Products	0	5	0	2
Division of Bone, Reproductive and Urologic Products	0	0	0	1
Division of Cardiovascular and Renal Products	0	0	2	1
Division of Dermatology and Dental Products	0	0	0	1
Division of Gastroenterology and Inborn Errors Products	0	1	2	3
Division of Hematology Products	0	3	8	12
Division of Medical Imaging Products	0	0	0	0
Division of Metabolism and Endocrinology Products	0	0	2	1
Division of Neurology Products	1	4	4	1
Division of Nonprescription Drug Products	0	0	0	0
Division of Oncology Products 1 (DOP1)	2	2	1	6
Division of Oncology Products 2 (DOP2)	3	3	7	9
Division of Psychiatry Products	0	1	0	5
Division of Pulmonary, Allergy, and Rheumatology Products	0	0	1	4

Review Division/Office	Accelerated Approval	Fast Track Products	Orphan Designations	Breakthrough Designations*
Division of Transplant and Ophthalmology Products	1	0	0	1
<i>CDER Totals</i>	7	24	28	49
<b>CBER Review Offices</b>				
Office of Blood Research and Review	1	0	2	0
Office of Cellular Tissue and Gene Therapies	0	0	0	7
Office of Vaccines Research and Review	0	0	0	2
<i>CBER Totals</i>	1	0	2	9
<b>FDA Totals</b>	<b>8</b>	<b>24</b>	<b>30</b>	<b>58</b>

\* This column does not represent filed figures; rather it shows the number of breakthrough designations granted on INDs, NDAs, and BLAs during FY 2016. Breakthrough designation is granted based on indication, and therefore one submission may have more than one breakthrough designation granted.



## Appendix E: FY 2015-2016 Regulatory Science Progress Report Executive Summary

FDA is charged with determining the safety, quality, and efficacy of new drugs, biologics, and medical devices<sup>47</sup> of increasing diversity and complexity. This responsibility shapes our scientific research portfolio, which seeks to develop the methods, tools, and standards needed to support evaluation of these products throughout their life cycle. Through guidance to industry, scientific publications, and open discussions at FDA-sponsored workshops and other forums, these methods, tools, and standards become valuable scientific resources in the public domain and furnish medical product developers with clear pathways and expectations as they generate the evidence to support their products. FDA is also responsible for the oversight of manufacturing quality throughout the lifecycle of medical products. In addition, the Agency plays a critical role in protecting the United States from emerging public health threats. These additional regulatory responsibilities are also important drivers of our research agenda. To address them, in fiscal years 2015 and 2016 we made significant progress in a number of areas:

### ***Refining non-clinical predictive models to support the evaluation of medical products***

FDA researchers developed and/or refined a wide variety of computational tools that now support nonclinical evaluation of medical products. These tools included sophisticated models to predict the carcinogenic effects of certain drug ingredients based on their structural attributes, computational phantoms<sup>48</sup> to evaluate medical imaging devices, and mechanistically informed pharmacokinetic models to help predict drug exposures in populations where clinical data is difficult to obtain. Genetic and transplantation approaches were used to create animal models that may more closely predict human response to medical products, and novel physical methods and procedures were developed to support the evaluation of bioequivalence<sup>49</sup> of generic versions of locally acting drugs, like those acting in the skin or airways.

### ***Improving clinical evaluation***

To support clinical evaluation of medical products, our statisticians helped design master protocols to efficiently evaluate therapies for treating defined subsets of cancer patients. Through a carefully designed pathway to foster biomarker development and adoption,<sup>50</sup> we have qualified new biomarkers to guide treatment decisions and to predict disease progression. A long-term research effort to improve prediction of cardiovascular risks contributed to the recommendation by the International Conference on Harmonization<sup>51</sup> that the costly “thorough QT” clinical study (used to evaluate most drug candidates) could be replaced with electrocardiogram-based measurements performed during early-phase clinical studies.

---

<sup>47</sup> These products include generic drugs, and increasingly, combination products.

<sup>48</sup> Computational phantoms are mathematical representations of the human body that can be used to predict the effects of medical devices, such as exposure to radiation.

<sup>49</sup> Bioequivalence is the absence of a significant difference in the rate and extent to which the active ingredient or active moiety in pharmaceutical equivalents or pharmaceutical alternatives becomes available at the site of drug action when administered at the same molar dose under similar conditions in an appropriately designed study. 21 CFR 314.3(b). One of the requirements for approval of a generic drug is that the generic drug must be bioequivalent to the innovator drug.

<sup>50</sup> The Biomarker Qualification Program.

<sup>51</sup> The International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use (ICH) was established to allow FDA and its counterparts in the European Union and Japan to achieve greater harmonization in the regulation of medical products.

### ***Ensuring product quality***

Our medical product centers continued to address scientific issues related to new technologies critical for product manufacturing, characterization of complex products, quality standards, post-approval monitoring of product quality, and understanding the complex interactions of regulated products with biological systems. We collaborated with the Biomedical Advanced Research and Development Authority (BARDA) to leverage continuous manufacturing to minimize domestic vulnerability to chemical, biologic, and radiologic threats, and we spearheaded creation of a 3-D printing facility to understand factors contributing to the quality and performance of implantable medical devices, drugs, and combination products made with this new technology. We developed automated approaches for predicting critical properties of human stem cell preparations, such as their ability to contribute to bone growth.

### ***Advancing capabilities for the post-marketing surveillance of medical products***

Exceeding our commitments to develop a national electronic system for active medical product surveillance, we expanded the Sentinel<sup>52</sup> system to include data from Medicare patients,, and we developed new systems and tools for safety signal detection and interpretation. We worked with diverse stakeholders in the medical device ecosystem to further the development of a National Evaluation System for health Technology (NEST) that will increase access to and use of real-world evidence to support regulatory decisions.

### ***Guidance to industry and promoting scientific collaboration***

We shared our research with the medical product industry by publishing [guidance documents](#)<sup>53</sup> on a number of scientific topics—for example, how to test for Zika virus in blood and biologic products, how to formulate and validate reprocessing instructions for reusable medical devices, and how to evaluate abuse-deterrent properties of opioids. Our research contributed to the development of consensus standards, providing medical product developers with clearer pathways to developing evidence for product approval. We sponsored public workshops to foster [scientific exchanges](#)<sup>54</sup> with stakeholders representing industry, government, the academic community, and the public, and conducted or participated in numerous training activities, professional and scientific meetings, and workshops to help our staff integrate new scientific knowledge into review and regulatory practice. We expanded the number of our public-private partnerships to advance drug development, for example by inaugurating the International Neonatal Consortium, whose purpose is to forge a predictable regulatory path for evaluating therapies for neonates.

### ***Improving our readiness to respond to health crises***

The medical product centers supported the regulatory public health response to the threats of Ebola virus and Zika virus through development of tools, reference materials, and publication of science-based guidance to support rapid development of new medical products to diagnose, treat, or prevent diseases caused by these pathogens. Research efforts on other threats, such as pandemic influenza virus, continued to advance.

---

<sup>52</sup> Launched as part of FDA's implementation of the Food and Drug Administration Amendments Act of 2007 (FDAAA), Sentinel is the FDA's national electronic system for monitoring of the safety of FDA-regulated medical products.

<sup>53</sup> [www.fda.gov/RegulatoryInformation/Guidances/default.htm](http://www.fda.gov/RegulatoryInformation/Guidances/default.htm)

<sup>54</sup> [www.fda.gov/newsevents/meetingsconferencesworkshops/default.htm](http://www.fda.gov/newsevents/meetingsconferencesworkshops/default.htm)

### ***Enhancing scientific infrastructure and coordination***

In the past two years, we enhanced information technology tools that support scientific review of regulatory applications. Following the success of the award-winning JumpStart service that allows reviewers to organize, manage, and verify the quality of the clinical data in product applications, FDA initiated Kickstart, a service that delivers individual training and user-driven support and analysis for non-clinical data. To make possible the secure deposition, retrieval, and analysis of the vast next generation sequencing data that will support personalized medicine, we continued to enhance our high performance scientific computing environments, enabling storage of regulatory data. We extended our laboratory capabilities and facilities for mission-critical areas, including advanced manufacturing, analytical methodology, and emerging infectious diseases.

Through organizational and programmatic changes, we have enhanced our ability to identify regulatory science issues and provide critical information for decision making. Within CDER, we created the Office of Pharmaceutical Quality to better align product quality research with review and inspection. CBER established a regulatory science council to oversee research activities and revamped its peer review process. CDRH piloted a Regulatory Science Research Program Review to facilitate a feedback loop between CDRH reviewers and bench scientists. New programs to enhance scientific interactions with stakeholders, such as the Critical Path Information meetings, saw a surge of interest from stakeholders.

The medical product centers also worked collaboratively to bring new efficiencies to research efforts by creating a unified program for animal research on the White Oak campus. A new shared resources program provided for multi-center funding and governance of large shared equipment and computing resources,<sup>55</sup> and our Challenge Grant programs continued to support innovative projects to advance regulatory science.

A full report, “Regulatory Science Progress Report for FY 2015 and FY 2016,” was completed in fulfillment of requirements under FDASIA Section 1124 and summarizes how FDA has advanced regulatory science to support medical product development in this time frame. The full report is available on the FDA website at:

[www.fda.gov/RegulatoryInformation/Legislation/SignificantAmendmentstotheFDCAAct/FDASIA/cm356316.htm](http://www.fda.gov/RegulatoryInformation/Legislation/SignificantAmendmentstotheFDCAAct/FDASIA/cm356316.htm).

---

<sup>55</sup> One of the first shared resources under this initiative was a 3-D printing facility, jointly funded and managed by the medical product centers, which will allow researchers to better understand the application of this technology to new products and to more effectively develop standards and guidance to facilitate product development.



## Appendix F: Definitions of Key Terms

- A. The term “review and act on” means the issuance of a complete action letter after the complete review of a filed complete application. The action letter, if it is not an approval, will set forth in detail the specific deficiencies and, where appropriate, the actions necessary to place the application in condition for approval.
- B. Goal Date Extensions for Major Amendments
1. A major amendment to an original application, efficacy supplement, or Class 2 resubmission of any of these applications, submitted at any time during the review cycle, may extend the goal date by 3 months. [Note: If the review cycle occurred prior to FY 2013, the major amendment must have been received within 3 months of the action due date to extend the action goal date by 3 months.]
  2. A major amendment may include, for example, a major new clinical safety/efficacy study report; major re-analysis of previously submitted study (studies); submission of a REMS with Elements to Assure Safe Use (ETASU) not included in the original application; or significant amendment to a previously submitted REMS with ETASU. Generally, changes to REMS that do not include ETASU and minor changes to REMS with ETASU will not be considered major amendments.
  3. A major amendment to a manufacturing supplement submitted at any time during the review cycle may extend the goal date by 2 months. [Note: If the review cycle occurred prior to FY 2013, the major amendment must have been received within 2 months of the action due date to extend the action goal date by 2 months.]
  4. Only one extension can be given per review cycle.
  5. Consistent with the underlying principles articulated in the Good Review Management Principles and Practices for PDUFA Products [guidance](#), FDA’s decision to extend the review clock should, except in rare circumstances, be limited to occasions where review of the new information could address outstanding deficiencies in the application and lead to approval in the current review cycle.
- C. A resubmitted original application is a complete response to an action letter addressing all identified deficiencies.
- D. Class 1 resubmitted applications are applications resubmitted after a complete response letter (or a not approvable or approvable letter) that include the following items only (or combinations of these items):
1. Final printed labeling
  2. Draft labeling
  3. Safety updates submitted in the same format, including tabulations, as the original safety submission with new data and changes highlighted (except when large amounts of new information, including important new adverse experiences not previously reported with the product, are presented in the resubmission)
  4. Stability updates to support provisional or final dating periods
  5. Commitments to perform Phase 4 postmarketing studies, including proposals for such studies
  6. Assay validation data
  7. Final release testing on the last 1-2 lots used to support approval
  8. A minor reanalysis of data previously submitted to the application (determined by the agency as fitting the Class 1 category)

9. Other minor clarifying information (determined by the agency as fitting the Class 1 category)
  10. Other specific items may be added later as the agency gains experience with the scheme and will be communicated via guidance documents to industry
- E. Class 2 resubmissions are resubmissions that include any other items, including any item that would require presentation to an advisory committee.
  - F. Meeting Requests commit FDA to notify the requestor of a formal meeting in writing within 14 days of request for Type A meetings or within 21 days of request for Type B and Type C meetings.
  - G. Scheduled meetings should be made within 30 days of receipt of request for Type A meetings, 60 days for Type B meetings, and 75 days for Type C meetings. If the requested date for any of these types of meetings is greater than 30, 60, or 75 days, as appropriate, from the date the request is received by FDA, the meeting date should be within 14 days of the requested date.
  - H. Meeting minutes are to be prepared by FDA clearly outlining agreements, disagreements, issues for further discussion, and action items. They will be available to the sponsor within 30 days of the meeting.
  - I. A Type A Meeting is a meeting that is necessary for an otherwise stalled drug development program to proceed (a “critical path” meeting) or to address an important safety issue.
  - J. A Type B Meeting is a 1) pre-IND, 2) end of Phase 1 (for Subpart E or Subpart H or similar products) or end of Phase 2/pre-Phase 3, or 3) a pre-NDA/BLA meeting. Each requestor should usually only request 1 each of these Type B Meetings for each potential application (NDA/BLA) (or combination of closely related products, i.e., same active ingredient but different dosage forms being developed concurrently).
  - K. A Type C Meeting is any other type of meeting.
  - L. The performance goals and procedures also apply to original applications and supplements for human drugs initially marketed on an over-the-counter (OTC) basis through an NDA or switched from prescription to OTC status through an NDA or supplement.
  - M. Information Technology-specific definitions:
    1. “Program” refers to the organizational resources, procedures, and activities assigned to conduct “the process for the review of human drug applications,” as defined in the Prescription Drug User Fee Act.
    2. “Standards-based” means compliant with published specifications that address terminology or information exchange between FDA and regulated parties or external stakeholders, as adopted by FDA or other agencies of the federal government, and often based on the publications of national or international Standards Development Organizations.
    3. “FDA Standards” means technical specifications that have been adopted and published by FDA through the appropriate governance process. FDA standards may apply to terminology, information exchange, engineering or technology specifications, or other technical matters related to information systems. FDA standards often are based on the publications of other federal agencies, or the publications of national or international Standards Development Organizations.
    4. “Product life cycle” means the sequential stages of human drug development, regulatory review and approval, post-market surveillance and risk management, and where

applicable, withdrawal of an approved drug from the market. In the context of the process for the review of human drug applications, the product life cycle begins with the earliest regulatory submissions in the IND phase, continues through the NDA or BLA review phase, and includes post-market surveillance and risk management activities as covered under the process for the review of human drug applications.

- N. Special Protocol Assessments: Upon specific request by a sponsor, FDA will evaluate certain protocols and issues to assess whether the design is adequate to meet scientific and regulatory requirements identified by the sponsor.
- O. First Cycle Filing Review Notifications: Under PDUFA V, FDA committed to report 90 percent of substantive review issues (or lack thereof) identified during the initial filing review to the applicant by letter, telephone conference, facsimile, secure e-mail, or other expedient means within 74 days of receipt of the original submission.
- P. Planned Review Timeline Notifications: FDA is to inform the applicant of the planned timeline for feedback related to labeling and PMRs and PMCs. Beginning in FY 2013, applications being reviewed under the Program are to include additional information about the planned date for the internal mid-cycle meeting and preliminary plans on whether to hold an Advisory Committee meeting to discuss the application.
- Q. The Application Integrity Policy focuses on the integrity of data and information in applications submitted to FDA for review and approval. It describes FDA's approach regarding the review of applications that may be affected by wrongful acts that raise significant questions regarding data reliability. More information on the policy is available at: [www.fda.gov/downloads/ICECI/EnforcementActions/ApplicationIntegrityPolicy/UCM072631.pdf](http://www.fda.gov/downloads/ICECI/EnforcementActions/ApplicationIntegrityPolicy/UCM072631.pdf).



**Department of Health and Human Services  
Food and Drug Administration**

This report was prepared by FDA's Office of Planning in collaboration with the Center for Biologics Evaluation and Research (CBER) and the Center for Drug Evaluation and Research (CDER). For information on obtaining additional copies contact:

Office of Planning  
Food and Drug Administration  
10903 New Hampshire Avenue  
Silver Spring, Maryland 20993-0002  
Phone: 301-796-4850

This report is available on the FDA Home Page at [www.fda.gov](http://www.fda.gov).