

## Disclaimer

The following report(s) provides findings from an FDA-initiated query using Sentinel. While Sentinel queries may be undertaken to assess potential medical product safety risks, they may also be initiated for various other reasons. Some examples include determining a rate or count of an identified health outcome of interest, examining medical product use, exploring the feasibility of future, more detailed analyses within Sentinel, and seeking to better understand Sentinel capabilities.

Data obtained through Sentinel are intended to complement other types of evidence such as preclinical studies, clinical trials, postmarket studies, and adverse event reports, all of which are used by FDA to inform regulatory decisions regarding medical product safety. The information contained in this report is provided as part of FDA's commitment to place knowledge acquired from Sentinel in the public domain as soon as possible. Any public health actions taken by FDA regarding products involved in Sentinel queries will continue to be communicated through existing channels.

FDA wants to emphasize that the fact that FDA has initiated a query involving a medical product and is reporting findings related to that query does not mean that FDA is suggesting health care practitioners should change their prescribing practices for the medical product or that patients taking the medical product should stop using it. Patients who have questions about the use of an identified medical product should contact their health care practitioners.

The following report contains a description of the request, request specifications, and results from the modular program run(s).

If you are using a web page screen reader and are unable to access this document, please contact the Sentinel Operations Center for assistance at [info@sentinelssystem.org](mailto:info@sentinelssystem.org).

## Overview for Request: cder\_mpl1r\_wp162

**Request ID:** cder\_mpl1r\_wp162\_nsdv\_v02

**Request Description:** In this report, we examined switching patterns among users of Advair Diskus with asthma or chronic obstructive pulmonary disease (COPD) who switched from Advair Diskus to other dry powder inhalers (DPI) and metered dose inhalers (MDI) containing corticosteroid and long acting beta agonist (LABA).

**Sentinel Routine Querying Module:** Cohort Identification and Descriptive Analysis (CIDA) module, version 9.3.0

**Data Source:** This query was distributed to 16 Sentinel Data Partners on April 3, 2020. This report includes data from May 10, 2013 through September 30, 2018. Please see Appendix A for a list of dates of available data for each Data Partner (DP).

**Exposures of Interest:** The exposures of interest were Advair Diskus, Breo Ellipta, Symbicort, Airduo Respiclick, Advair HFA, and Dulera. Advair HFA and Dulera were grouped into a single "Other Inhaled Corticosteroid/ long acting  $\beta$ 2 agonist (ICS/LABA)" exposure. We defined the exposures using outpatient pharmacy dispensing records and National Drug Codes (NDCs). See Appendix B for a list of a list of generic and brand names of medical products used to define exposure in this request.

**Cohort Eligibility Criteria:** Eligible switch pattern episodes came from members who were enrolled in health plans with both medical and drug coverage for at least 365 days prior to the date of their index Advair Diskus dispensing, during which gaps in coverage of up to 45 days were allowed. We excluded episodes from patients aged less than 4 years old on the index date. We considered switch pattern episodes from among two mutually exclusive patient populations. The first had a diagnosis of asthma or asthma exacerbation, without evidence of COPD, in the 365 days prior to their index Advair Diskus dispensing. The second had a diagnosis of COPD or COPD exacerbation, but no evidence of asthma, in the 365 days prior to their index Advair Diskus dispensing.

### **Switch Pattern Cohorts:**

We examined all eligible switch pattern episodes; therefore a patient could contribute more than one episode. We did not apply any new use requirements for a switch pattern episode, so both prevalent and new users were eligible for inclusion. Each switch pattern episode was indexed by a dispensing of Advair Diskus.

We defined a switch as a dispensing for another of the exposures of interest (Breo Ellipta, Symbicort, Airduo Respiclick, or Advair HFA/Dulera) within 30 days after the final days supply of the index Advair Diskus treatment episode. Airduo Respiclick was approved during the query period on January 27, 2017; therefore, we did not consider switches to Airduo Respiclick following Advair Diskus episodes which ended prior to that date.

We allowed gaps of up to 30 days when constructing Advair Diskus treatment episodes. Index Advair Diskus treatment episodes which did not end in a switch were considered to be censored. We evaluated switch pattern episodes separately among patients with asthma but not COPD and vice versa.

See Appendix C for a list of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) diagnosis codes used to define Asthma and COPD in this request.

### Overview for Request: cder\_mpl1r\_wp162

**Switching Metrics:** For each eligible switch pattern episode, we calculated time-to-switch or time-to-censoring. Time-to-switch was defined as the number of days between the dispensing date of the index Advair Diskus and the dispensing date of the switched-to drug (inclusive of any episode gaps). Overlap in the days supplied of first and second drug in a switch pattern was allowed when calculating time to switch, with the exception of dispensings occurring on the same day. For example, if a patient was dispensed Symbicort on the same day as Advair Diskus, their episode would be excluded from the Advair Diskus to Symbicort switch pattern cohort.

Time-to-censoring was calculated from date of the index Advair Diskus dispensing until the censoring date (inclusive of any episode gaps). Episodes could be censored for product discontinuation, death, end of the query period, end of Data Partner data, or patient disenrollment from the health plan.

See Appendix C for ICD-9-CM and ICD-10-CM diagnosis codes used to define exposures, inclusion and exclusion criteria in this request.

**See Appendix D.1 and D.2 for query design specifications of the utilization cohorts and switch pattern cohorts, respectively.**

**Limitations:** Algorithms used to define exposures, outcomes, inclusion and exclusion criteria, and covariates are imperfect and may be misclassified. Therefore, data should be interpreted with this limitation in mind.

**Notes:** Please contact the Sentinel Operations Center ([info@sentinelssystem.org](mailto:info@sentinelssystem.org)) for questions and to provide comments/suggestions for future enhancements to this document. For more information on Sentinel's routine querying modules, please refer to the documentation (<https://dev.sentinelssystem.org/projects/SENTINEL/repos/sentinel-routine-querying-tool-documentation/browse>).

**Table of contents**

**Glossary** List of Terms Found in this Report and their Definitions

**Table 1** Descriptive Statistics of Time to First Switch, in Days in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Table 2a** Time to First Switch for Inhaled Corticosteroid/Long-acting Beta-Agonist (ICS/LABA) Users with a History of Asthma, in Days from Index Categories in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Table 2b** Time to First Switch for Inhaled Corticosteroid/Long-acting Beta-Agonist (ICS/LABA) Users with a History of COPD, in Days from Index Categories in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Table 3a** Descriptive Statistics of Time to First Switch or Censoring, in Days in Users with a History of Asthma in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Table 3b** Descriptive Statistics of Time to First Switch or Censoring, in Days in Users with a History of COPD in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Figure 1a** Survival Curve for Time to First Switch, in Days: Advair Diskus (with Prior Asthma) to Breo Ellipta in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Figure 1b** Survival Curve for Time to First Switch, in Days: Advair Diskus (with Prior Asthma) to Symbicort in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Figure 1c** Survival Curve for Time to First Switch, in Days: Advair Diskus (with Prior Asthma) to Other ICS/LABA (Advair HFA or Dulera) in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Figure 1d** Survival Curve for Time to First Switch, in Days: Advair Diskus (with Prior Asthma) to Airduo Respiclick in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Figure 1e** Survival Curve for Time to First Switch, in Days: Advair Diskus (with Prior COPD) to Breo Ellipta in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Figure 1f** Survival Curve for Time to First Switch, in Days: Advair Diskus (with Prior COPD) to Symbicort in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Figure 1g** Survival Curve for Time to First Switch, in Days: Advair Diskus (with Prior COPD) to Other ICS/LABA (Advair HFA or Dulera) in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Figure 1h** Survival Curve for Time to First Switch, in Days: Advair Diskus (with Prior COPD) to Airduo Respiclick in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Figure 2a** Survival Curve for Time to Censoring, in Days, by Censoring Reason: Advair Diskus (with Prior Asthma) to Breo Ellipta in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Figure 2b** Survival Curve for Time to Censoring, in Days, by Censoring Reason: Advair Diskus (with Prior Asthma) to Symbicort in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Figure 2c** Survival Curve for Time to Censoring, in Days, by Censoring Reason: Advair Diskus (with Prior Asthma) to Other ICS/LABA (Advair HFA or Dulera) in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Figure 2d** Survival Curve for Time to Censoring, in Days, by Censoring Reason: Advair Diskus (with Prior Asthma) to Airduo Respiclick in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Figure 2e** Survival Curve for Time to Censoring, in Days, by Censoring Reason: Advair Diskus (with Prior COPD) to Breo Ellipta in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

**Figure 2f** Survival Curve for Time to Censoring, in Days, by Censoring Reason: Advair Diskus (with Prior COPD) to Symbicort in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

### Table of contents

<b><u>Figure 2g</u></b>	Survival Curve for Time to Censoring, in days, by Censoring Reason: Advair Diskus (with Prior COPD) to Other ICS/LABA (Advair HFA or Dulera) in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018
<b><u>Figure 2h</u></b>	Survival Curve for Time to Censoring, in days, by Censoring Reason: Advair Diskus (with Prior COPD) to Airduo Respiclick in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018
<b><u>Appendix A</u></b>	Dates of Available Data for Each Data Partner (DP) up to Most Recent Data Available as of Query Distribution Date (September 30, 2018)
<b><u>Appendix B</u></b>	List of Generic and Brand Name Medical Products Used to Define Index Exposure in this Request
<b><u>Appendix C</u></b>	List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Inclusion and Exclusion Criteria in this Request
<b><u>Appendix D.1</u></b>	Query Design Specifications for Utilization Cohorts in this Request
<b><u>Appendix D.2</u></b>	Query Design Specifications for the Switch Pattern Cohorts in this Request

**Glossary of Terms for Analyses Using  
Cohort Identification and Descriptive Analysis (CIDA) Module\***

**Amount Supplied** - number of units (pills, tablets, vials) dispensed. Net amount per NDC per dispensing.

**Blackout Period** - number of days at the beginning of a treatment episode that events are to be ignored. If an event occurs during the blackout period, the episode is excluded.

**Care Setting** - type of medical encounter or facility where the exposure, event, or condition code was recorded. Possible care settings include: Inpatient Hospital Stay (IP), Non-Acute Institutional Stay (IS), Emergency Department (ED), Ambulatory Visit (AV), and Other Ambulatory Visit (OA). For laboratory results, possible care settings include: Emergency Department (E), Home (H), Inpatient (I), Outpatient (O), or Unknown or Missing (U). The Care Setting, along with the Principal Diagnosis Indicator (PDX), forms the Care Setting/PDX parameter.

**Ambulatory Visit (AV)** - includes visits at outpatient clinics, same-day surgeries, urgent care visits, and other same-day ambulatory hospital encounters, but excludes emergency department encounters.

**Emergency Department (ED)** - includes ED encounters that become inpatient stays (in which case inpatient stays would be a separate encounter). Excludes urgent care visits.

**Inpatient Hospital Stay (IP)** - includes all inpatient stays, same-day hospital discharges, hospital transfers, and acute hospital care where the discharge is after the admission date.

**Non-Acute Institutional Stay (IS)** - includes hospice, skilled nursing facility (SNF), rehab center, nursing home, residential, overnight non-hospital dialysis and other non-hospital stays.

**Other Ambulatory Visit (OA)** - includes other non overnight AV encounters such as hospice visits, home health visits, skilled nursing facility visits, other non-hospital visits, as well as telemedicine, telephone and email consultations.

**Cohort Definition (drug/exposure)** - indicates how the cohort will be defined: 01: Cohort includes only the first valid treatment episode during the query period; 02: Cohort includes all valid treatment episodes during the query period; 03: Cohort includes all valid treatment episodes during the query period until an event occurs.

**Days Supplied** - number of days supplied for all dispensings in qualifying treatment episodes.

**Eligible Members** - number of members eligible for an incident treatment episode (defined by the drug/exposure and event washout periods) with drug and medical coverage during the query period.

**Enrollment Gap** - number of days allowed between two consecutive enrollment periods without breaking a "continuously enrolled" Episodes - treatment episodes; length of episode is determined by days supplied in one dispensing or consecutive dispensings bridged by the episode gap.

**Episode Gap** - number of days allowed between two (or more) consecutive exposures (dispensings/procedures) to be considered the same treatment episode.

**Evaluation Period** - number of days relative to index wherein a member is required to have evidence of a condition (diagnosis/procedure/drug dispensing).

**Event Deduplication** - specifies how events are counted by the Modular Program (MP) algorithm: 0: Counts all occurrences of a health outcome of interest (HOI) during an exposure episode; 1: de-duplicates occurrences of the same HOI code and code type on the same day; 2: de-duplicates occurrences of the same HOI group on the same day (e.g., de-duplicates at the group level).

**Exposure Episode Length** - number of days after exposure initiation that is considered "exposed time."

**Exposure Extension Period** - number of days post treatment period in which the outcomes/events are counted for a treatment episode. Extensions are added after any episode gaps have been bridged.

**Maximum Episode Duration** - truncates exposure episodes after a requester-specified number of exposed days. Applied after any gaps are bridged and extension days added to the length of the exposure episode.

**Member-Years** - sum of all days of enrollment with medical and drug coverage in the query period preceded by an exposure

**Minimum Days Supplied** - specifies a minimum number of days in length of the days supplied for the episode to be considered.

**Minimum Episode Duration** - specifies a minimum number of days in length of the episode for it to be considered. Applied after any gaps are bridged and extension days added to the length of the exposure episode.

**Monitoring Period** - used to define time periods of interest for both sequential analysis and simple cohort characterization requests.

**Principal Diagnosis (PDX)** - diagnosis or condition established to be chiefly responsible for admission of the patient to the hospital. 'P' = principal diagnosis, 'S' = secondary diagnosis, 'X' = unspecified diagnosis, '.' = blank. Along with the Care Setting values, forms the Caresetting/PDX parameter.

**Query Period** - period in which the modular program looks for exposures and outcomes of interest.

**Treatment Episode Truncation Indicator** - indicates whether the exposure episode will be truncated at the occurrence of a

**Washout Period (drug/exposure)** - number of days a user is required to have no evidence of prior exposure (drug dispensing/procedure) and continuous drug and medical coverage prior to an incident treatment episode.

**Washout Period (event/outcome)** - number of days before exposure episode that a user is required to have no evidence of a prior event (procedure/diagnosis) and continuous drug and medical coverage prior to an incident treatment episode.

**Years at Risk** - number of days supplied plus any episode gaps and exposure extension periods all divided by 365.25.

\*all terms may not be used in this report

**Table 1. Descriptive Statistics of Time to First Switch, in Days<sup>1</sup> in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018**

Switch Pattern	Switch Pattern		Standard Deviation	Minimum	1%	5%	10%	25%	50%	75%	90%	95%	99%	Maximum
	Episodes <sup>2</sup>	Mean												
<b>History of Asthma</b>														
Advair Diskus to Breo Ellipta	9,230	153.99	209.95	1	2	8	15	36	76	179	398	590	1,057	1860
Advair Diskus to Symbicort	10,168	125.85	181.45	1	1	5	11	29	57	141	321	496	868	2154
Advair Diskus to Other ICS/LABA (Advair HFA or Dulera)	10,250	107.54	153.89	1	1	6	11	28	55	118	258	395	779	1888
Advair Diskus to Airduo Respiclick	27	138.70	133.76	8	8	10	24	38	91	161	401	403	430	430
<b>History of COPD</b>														
Advair Diskus to Breo Ellipta	28,408	242.34	312.80	1	2	10	21	44	110	315	664	939	1,450	2162
Advair Diskus to Symbicort	45,545	154.17	217.74	1	2	7	14	34	71	183	392	581	1,108	2191
Advair Diskus to Other ICS/LABA (Advair HFA or Dulera)	18,485	142.77	211.32	1	1	7	14	32	64	158	352	567	1,118	2157
Advair Diskus to Airduo Respiclick	35	367.29	473.19	1	1	17	25	43	195	409	1,408	1,578	1,583	1583

<sup>1</sup>Time to first switch is calculated from the dispensing date of Advair until the dispensing date of the switched-to drug, inclusive of gaps between dispensings of up to 30 days.

<sup>2</sup>This table includes only Advair Diskus treatment episodes that resulted in a switch. Patients could contribute multiple episodes.



**Table 2a. Time to First Switch for Inhaled Corticosteroid/Long-acting Beta-Agonist (ICS/LABA) Users with a History of Asthma, in Days from Index Categories in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018**

Switch	Advair Diskus to Breo Ellipta		Advair Diskus to Symbicort		Advair Diskus to Other ICS/LABA (Advair HFA or Dulera)		Advair Diskus to Airduo Respiclick	
	Switch Episodes <sup>2</sup> (Number)	Switch Episodes (Percent)	Switch Episodes <sup>2</sup> (Number)	Switch Episodes (Percent)	Switch Episodes <sup>2</sup> (Number)	Switch Episodes (Percent)	Switch Episodes <sup>2</sup> (Number)	Switch Episodes (Percent)
Number of Patients <sup>1</sup>	9,129		10,029		10,062		27	
Days from Index <sup>3</sup>								
Overall	9,230	100.0%	10,168	100.0%	10,250	100.0%	27	100.0%
0-30	1,850	20.0%	2,687	26.4%	2,794	27.3%	*****	*****
31-90	3,327	36.0%	3,736	36.7%	4,030	39.3%	*****	*****
91-150	1,392	15.1%	1,357	13.3%	1,447	14.1%	*****	*****
151-210	704	7.6%	686	6.7%	646	6.3%	*****	*****
211-270	425	4.6%	437	4.3%	365	3.6%	*****	*****
271-330	331	3.6%	282	2.8%	258	2.5%	*****	*****
331-360	122	1.3%	114	1.1%	94	0.9%	*****	*****
361+	1,079	11.7%	869	8.5%	616	6.0%	*****	*****

<sup>1</sup>Patients could contribute multiple episodes.

<sup>2</sup>This table includes only Advair treatment episodes that resulted in a switch.

<sup>3</sup>Time to first switch is calculated from the dispensing date of Advair until the dispensing date of the switched-to drug, inclusive of gaps between dispensings of up to 30 days

\*\*\*\*\*Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

**Table 2b. Time to First Switch for Inhaled Corticosteroid/Long-acting Beta-Agonist (ICS/LABA) Users with a History of COPD, in Days from Index Categories in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018**

Switch	Advair Diskus to Breo Ellipta		Advair Diskus to Symbicort		Advair Diskus to Other ICS/LABA (Advair HFA or Dulera)		Advair Diskus to Airduo Respiclick	
Number of Patients <sup>1</sup>	27,985		44,458		18,058		35	
Days from Index <sup>3</sup>	Switch Episodes <sup>2</sup> (Number)	Switch Episodes (Percent)	Switch Episodes <sup>2</sup> (Number)	Switch Episodes (Percent)	Switch Episodes <sup>2</sup> (Number)	Switch Episodes (Percent)	Switch Episodes <sup>2</sup> (Number)	Switch Episodes (Percent)
Overall	28,408	100.0%	45,545	100.0%	18,485	100.0%	35	100.0%
0-30	4,553	16.0%	10,153	22.3%	4,370	23.6%	*****	*****
31-90	8,086	28.5%	15,563	34.2%	6,625	35.8%	*****	*****
91-150	3,855	13.6%	6,374	14.0%	2,677	14.5%	*****	*****
151-210	2,283	8.0%	3,582	7.9%	1,378	7.5%	*****	*****
211-270	1,577	5.6%	2,437	5.4%	826	4.5%	*****	*****
271-330	1,251	4.4%	1,627	3.6%	614	3.3%	*****	*****
331-360	510	1.8%	625	1.4%	205	1.1%	*****	*****
361+	6,293	22.2%	5,184	11.4%	1,790	9.7%	11	31.4%

<sup>1</sup>Patients could contribute multiple episodes.

<sup>2</sup>This table includes only Advair treatment episodes that resulted in a switch.

<sup>3</sup>Time to first switch is calculated from the dispensing date of Advair until the dispensing date of the switched-to drug, inclusive of gaps between dispensings of up to 30 days

\*\*\*\*\*Data are not presented in these cells due to a small sample size or to assure a small cell cannot be recalculated through the cells presented.

**Table 3a. Descriptive Statistics of Time to First Switch or Censoring, in Days<sup>1</sup> in Users with a History of Asthma in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018**

Switch Pattern	Episodes <sup>2</sup> (Number)	Mean	Standard Deviation	Minimum	1%	5%	10%	25%	50%	75%	90%	95%	99%	Maximum
<b>Advair Diskus to Breo Ellipta</b>														
First Switch	9,230	153.99	209.95	1	2	8	15	36	76	179	398	590	1,057	1,860
Censoring reason 1: product discontinuation	1,229,889	95.15	137.37	0	11	29	29	29	41	89	201	319	720	2,310
Censoring reason 2: end of available data	64,176	220.21	299.06	0	1	6	11	28	87	285	628	865	1,307	2,263
Censoring reason 3: end of enrollment	104,337	181.40	263.81	0	1	4	10	25	75	212	530	741	1,227	2,263
Censoring reason 4: death	2,930	192.53	261.49	0	2	7	13	27	85	249	524	760	1,226	2,039
<b>Advair Diskus to Symbicort</b>														
First Switch	10,168	125.85	181.45	1	1	5	11	29	57	141	321	496	868	2,154
Censoring reason 1: product discontinuation	1,228,102	95.27	137.53	0	11	29	29	29	42	89	201	320	722	2,310
Censoring reason 2: end of available data	64,136	219.85	298.39	0	1	6	11	28	87	285	627	863	1,305	2,263
Censoring reason 3: end of enrollment	104,196	181.16	263.38	0	1	4	10	25	75	212	529	739	1,224	2,263
Censoring reason 4: death	2,924	192.39	261.75	0	2	7	13	27	85	250	521	760	1,248	2,039
<b>Advair Diskus to Other ICS/LABA (Advair HFA or Dulera)</b>														
First Switch	10,250	107.54	153.89	1	1	6	11	28	55	118	258	395	779	1,888
Censoring reason 1: product discontinuation	1,228,640	95.44	137.97	0	11	29	29	29	42	89	202	322	725	2,310
Censoring reason 2: end of available data	64,202	220.28	299.11	0	1	6	11	28	87	285	628	865	1,306	2,263
Censoring reason 3: end of enrollment	104,378	181.56	264.02	0	1	4	10	25	75	212	530	743	1,225	2,263
Censoring reason 4: death	2,944	193.81	263.06	0	2	7	13	27	85	251	526	761	1,248	2,039
<b>Advair Diskus to Airduo Respiclick</b>														
First Switch	27	138.70	133.76	8	8	10	24	38	91	161	401	403	430	430
Censoring reason 1: product discontinuation	818,099	108.69	158.49	0	9	29	29	29	59	106	244	387	836	2,310
Censoring reason 2: end of available data	64,562	221.48	300.27	0	1	6	12	28	87	288	631	867	1,308	2,263
Censoring reason 3: end of enrollment	91,594	196.26	276.87	0	1	5	11	26	81	238	570	795	1,258	2,263
Censoring reason 4: death	1,910	226.38	293.79	0	3	9	15	33	109	298	616	864	1,350	2,039

<sup>1</sup>Time to switch or censoring calculations include gaps between dispensings of up to 30 days. Exposure extensions are not applied.

<sup>2</sup>Treatment episodes could be censored for multiple reasons. Patients could contribute multiple episodes.

**Table 3b. Descriptive Statistics of Time to First Switch or Censoring, in Days<sup>2</sup> in Users with a History of COPD in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018**

Switch Pattern	Episodes <sup>2</sup> (Number)	Mean	Standard Deviation	Minimum	1%	5%	10%	25%	50%	75%	90%	95%	99%	Maximum
<b>Advair Diskus to Breo Ellipta</b>														
First Switch	28,408	242.34	312.80	1	2	10	21	44	110	315	664	939	1,450	2,162
Censoring reason 1: product discontinuation	2,447,465	118.15	192.26	0	20	29	29	29	59	117	269	433	1,046	2,328
Censoring reason 2: end of available data	65,674	366.63	488.18	0	2	8	16	47	141	502	1,131	1,558	2,035	2,328
Censoring reason 3: end of enrollment	127,404	287.82	411.55	0	1	6	13	35	110	354	842	1,257	1,903	2,328
Censoring reason 4: death	58,110	207.21	293.36	0	2	7	12	26	86	258	569	843	1,429	2,235
<b>Advair Diskus to Symbicort</b>														
First Switch	45,545	154.17	217.74	1	2	7	14	34	71	183	392	581	1,108	2,191
Censoring reason 1: product discontinuation	2,425,698	118.58	193.44	0	19	29	29	29	59	117	269	437	1,055	2,328
Censoring reason 2: end of available data	65,568	365.43	486.83	0	2	8	16	47	141	501	1,125	1,552	2,033	2,328
Censoring reason 3: end of enrollment	126,939	287.21	410.59	0	1	6	13	35	110	354	837	1,252	1,902	2,328
Censoring reason 4: death	57,856	207.07	293.10	0	2	7	12	26	86	258	569	841	1,427	2,235
<b>Advair Diskus to Other ICS/LABA (Advair HFA or Dulera)</b>														
First Switch	18,485	142.77	211.32	1	1	7	14	32	64	158	352	567	1,118	2,157
Censoring reason 1: product discontinuation	2,457,818	119.48	194.69	0	20	29	29	29	59	118	269	444	1,062	2,328
Censoring reason 2: end of available data	65,919	368.15	489.47	0	2	8	16	47	142	505	1,139	1,562	2,035	2,328
Censoring reason 3: end of enrollment	127,780	289.11	412.84	0	1	6	13	35	110	356	846	1,263	1,903	2,328
Censoring reason 4: death	58,296	208.22	294.82	0	2	7	12	26	86	259	572	847	1,435	2,235
<b>Advair Diskus to Airduo Respiclick</b>														
First Switch	35	367.29	473.19	1	1	17	25	43	195	409	1,408	1,578	1,583	1,583
Censoring reason 1: product discontinuation	795,562	175.74	291.17	0	12	29	29	29	78	175	452	799	1,529	2,328
Censoring reason 2: end of available data	66,303	369.67	490.33	0	2	8	16	48	143	508	1,144	1,564	2,035	2,328
Censoring reason 3: end of enrollment	90,093	353.98	466.53	0	2	8	16	46	139	490	1,059	1,463	1,982	2,328
Censoring reason 4: death	19,685	322.52	407.98	0	3	9	15	40	142	447	959	1,253	1,703	2,235

<sup>1</sup>Time to switch or censoring calculations include gaps between dispensings of up to 30 days. Exposure extensions are not applied.

<sup>2</sup>Treatment episodes could be censored for multiple reasons. Patients could contribute multiple episodes.

Figure 1a. Survival Curve for Time to First Switch, in Days: Advair Diskus (with Prior Asthma) to Breo Ellipta in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

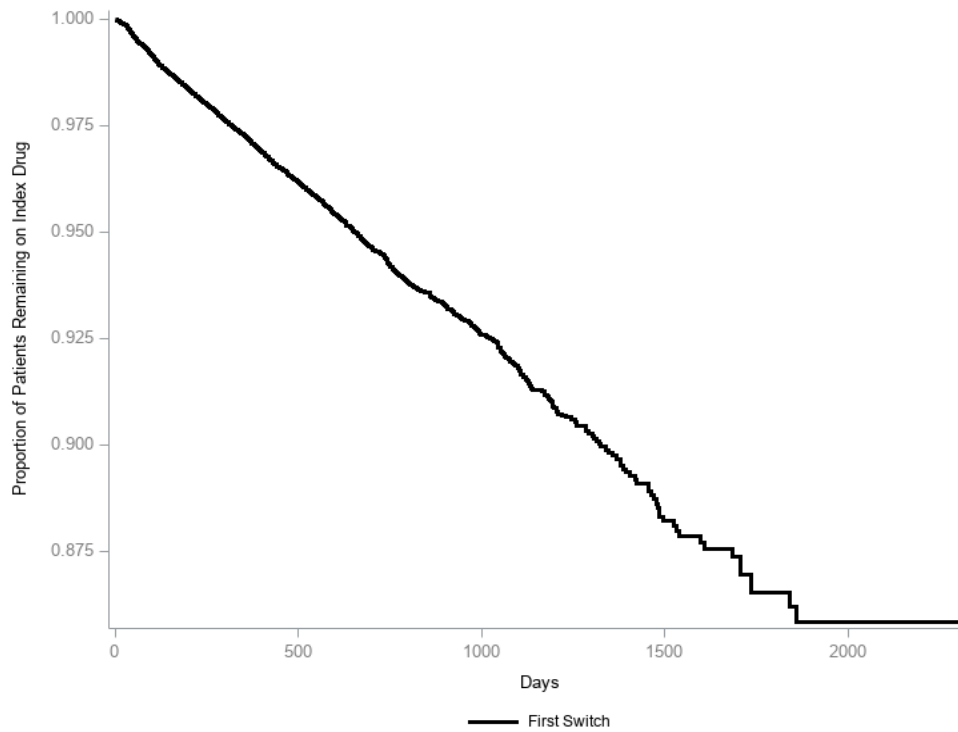


Figure 1b. Survival Curve for Time to First Switch, in Days: Advair Diskus (with Prior Asthma) to Symbicort in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

---

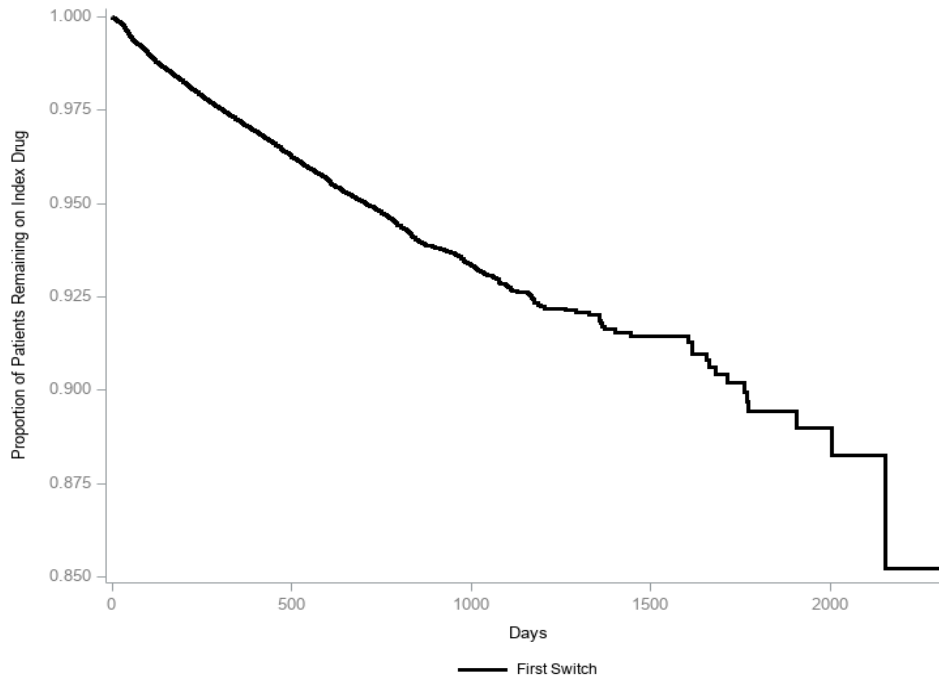


Figure 1c. Survival Curve for Time to First Switch, in Days: Advair Diskus (with Prior Asthma) to Other ICS/LABA (Advair HFA or Dulera) in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

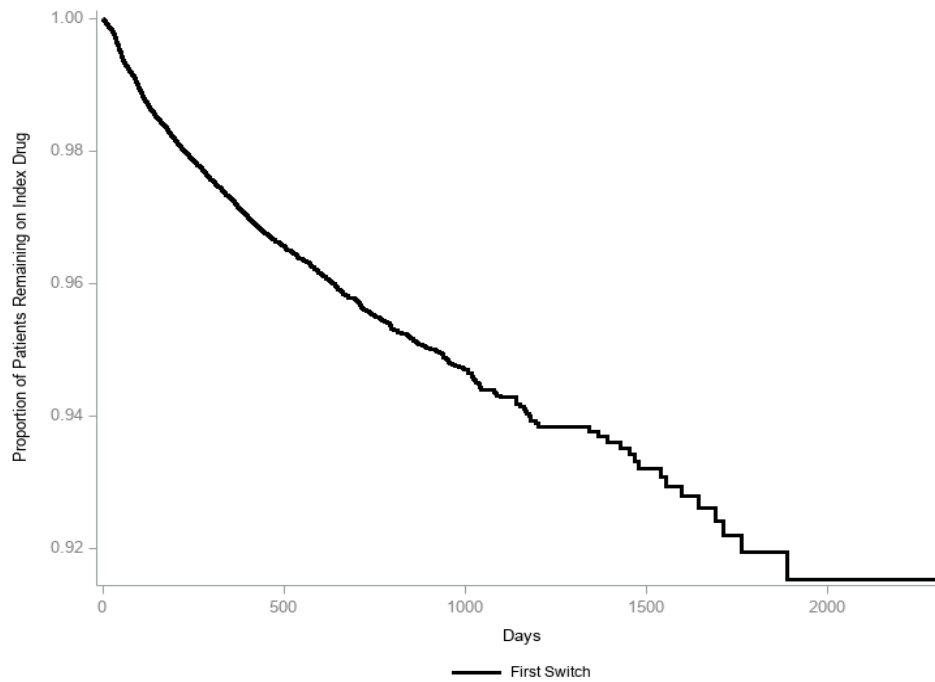


Figure 1d. Survival Curve for Time to First Switch, in Days: Advair Diskus (with Prior Asthma) to Airduo Resplick in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

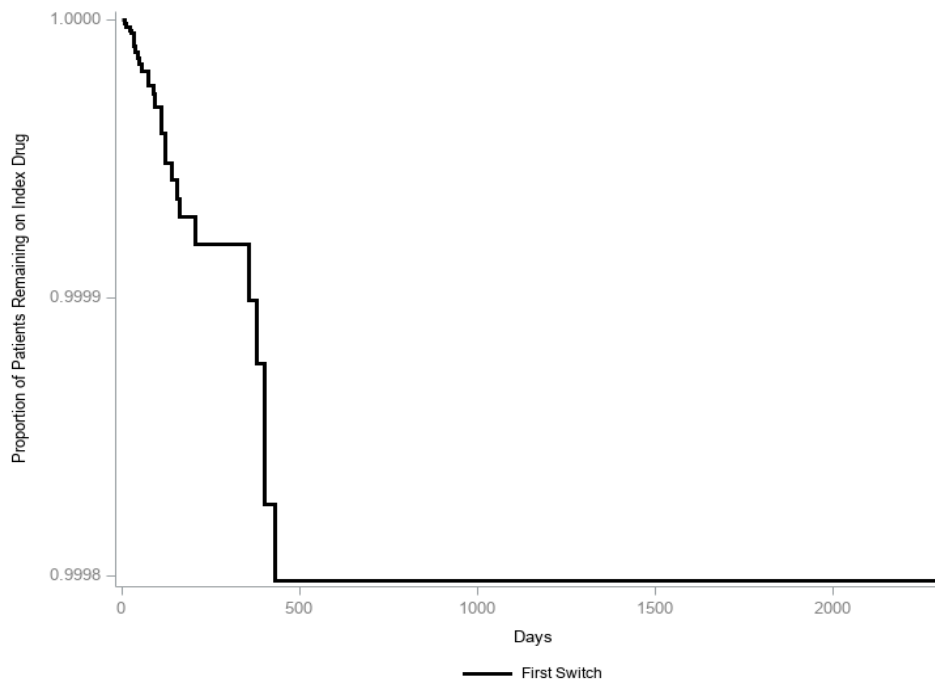
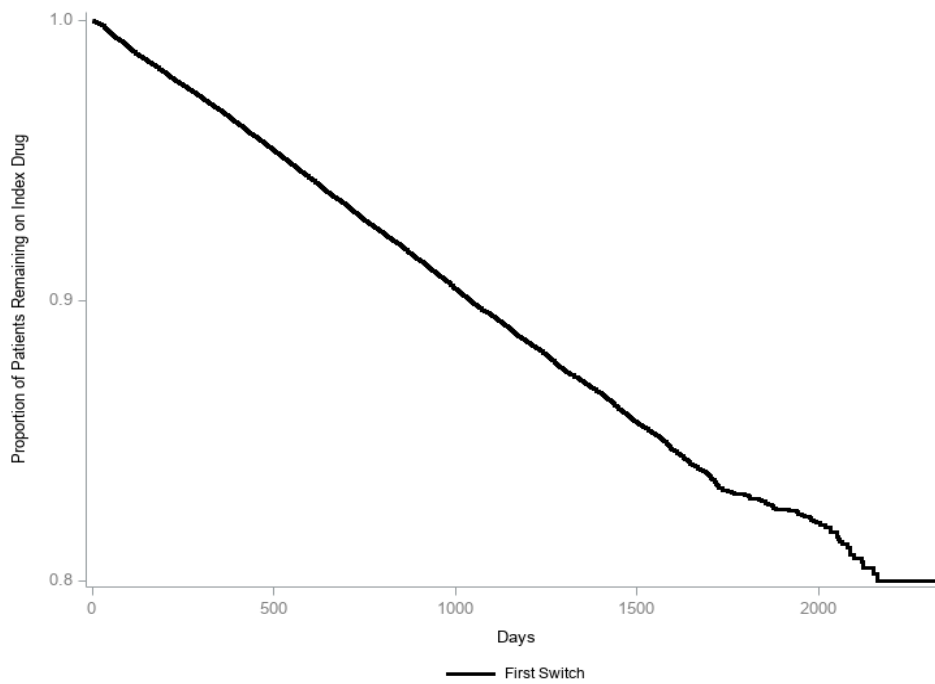


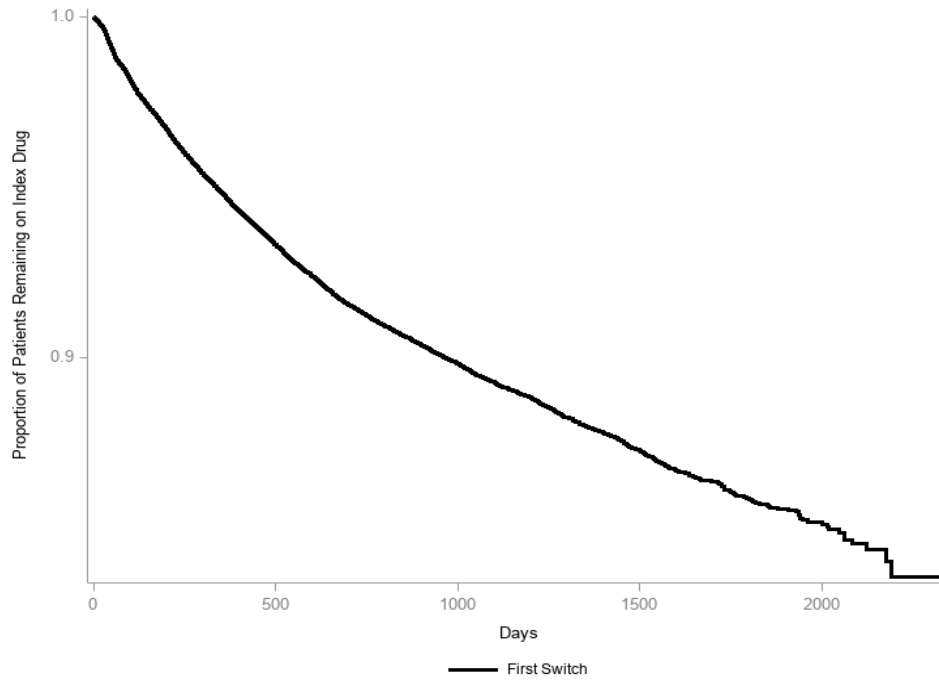


Figure 1e. Survival Curve for Time to First Switch, in Days: Advair Diskus (with Prior COPD) to Breo Ellipta in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018



**Figure 1f. Survival Curve for Time to First Switch, in Days: Advair Diskus (with Prior COPD) to Symbicort in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018**

---



**Figure 1g. Survival Curve for Time to First Switch, in Days: Advair Diskus (with Prior COPD) to Other ICS/LABA (Advair HFA or Dulera) in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018**

---

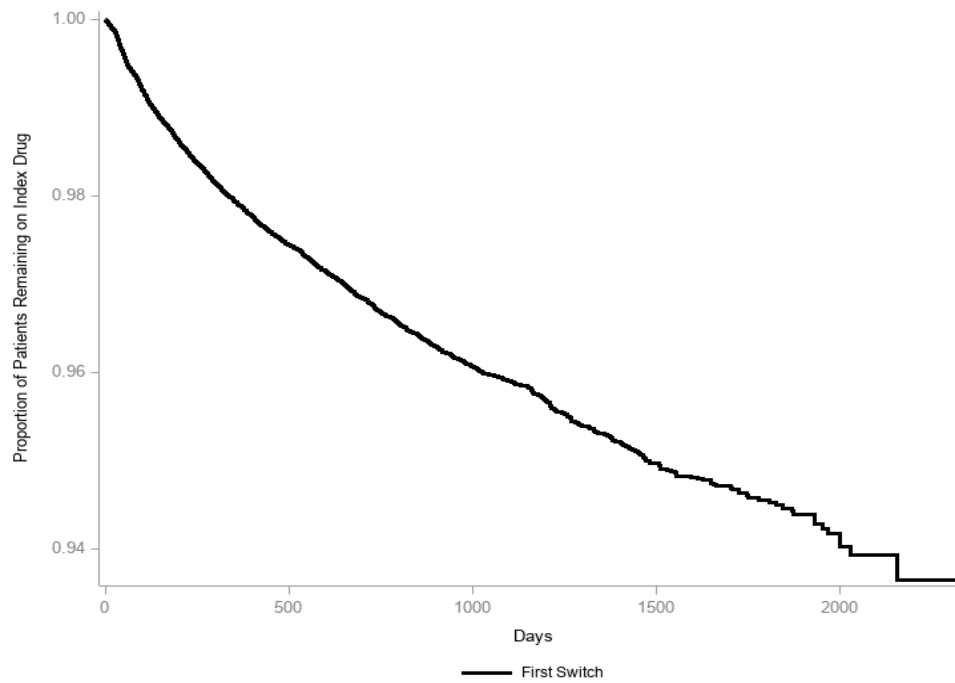
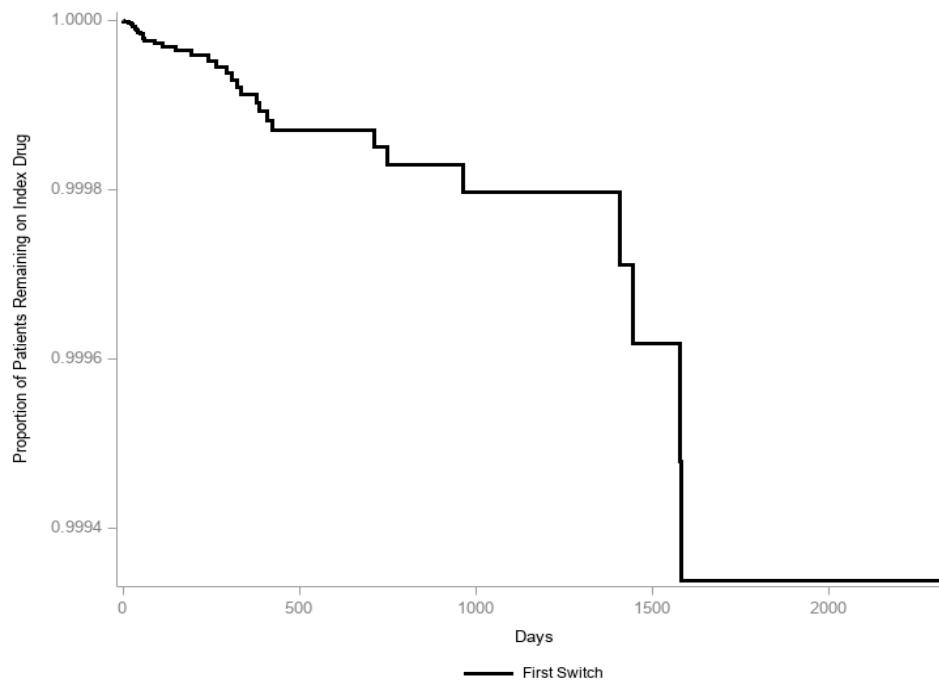
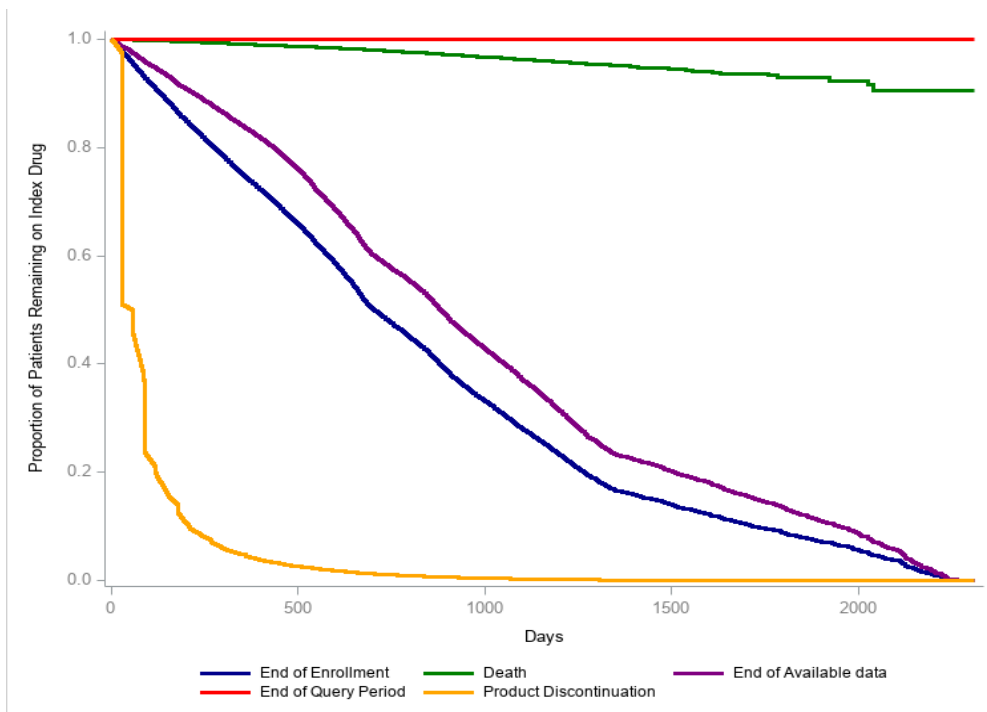


Figure 1h. Survival Curve for Time to First Switch, in Days: Advair Diskus (with Prior COPD) to Airduo Respiclick in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018

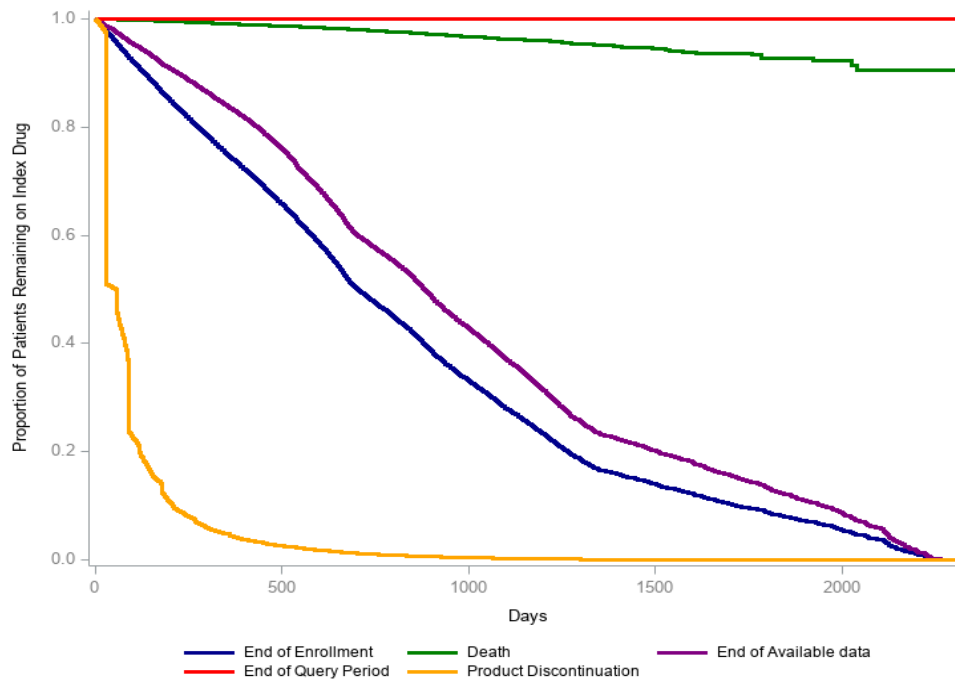


**Figure 2a. Survival Curve for Time to Censoring, in Days, by Censoring Reason: Advair Diskus (with Prior Asthma) to Breo Ellipta in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018<sup>1</sup>**



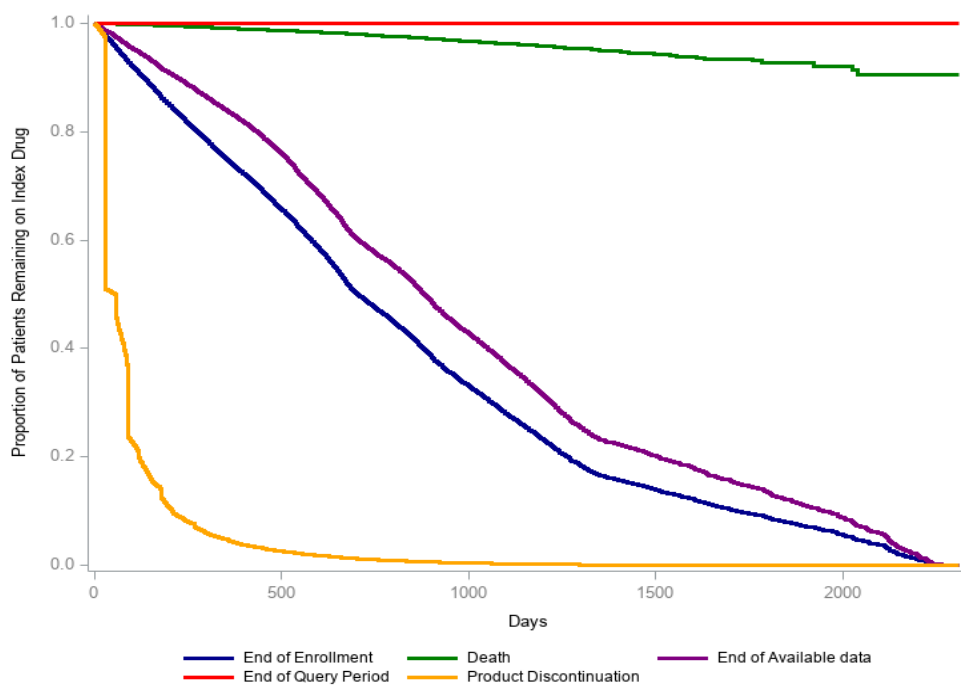
<sup>1</sup>No patients were censored due to query end.

Figure 2b. Survival Curve for Time to Censoring, in Days, by Censoring Reason: Advair Diskus (with Prior Asthma) to Symbicort in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018<sup>1</sup>



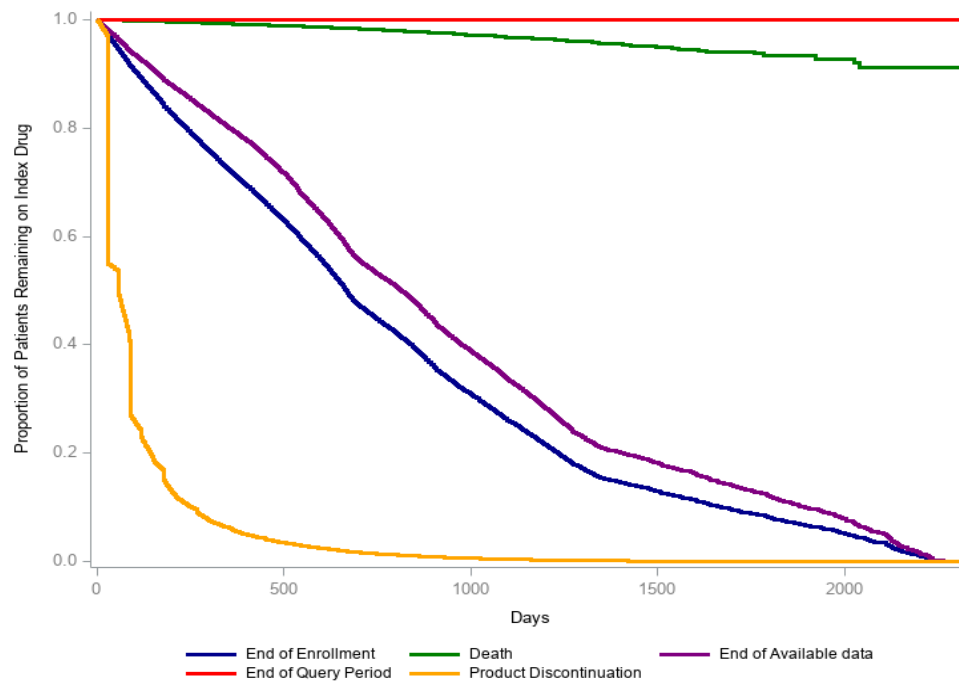
<sup>1</sup>No patients were censored due to query end.

Figure 2c. Survival Curve for Time to Censoring, in Days, by Censoring Reason: Advair Diskus (with Prior Asthma) to Other ICS/LABA (Advair HFA or Dulera) in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018<sup>1</sup>



<sup>1</sup>No patients were censored due to query end.

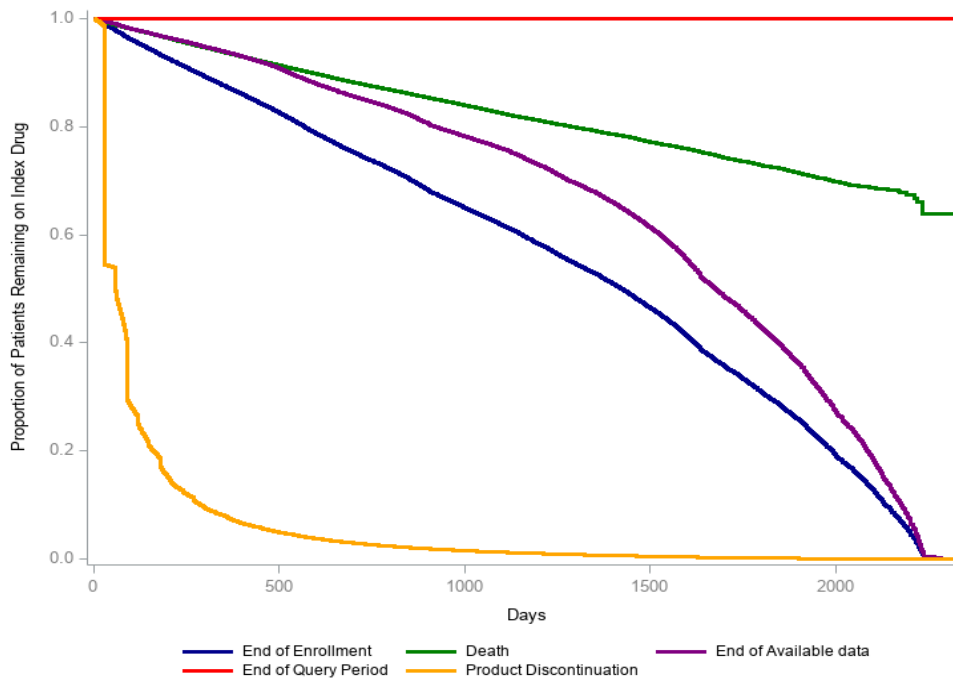
Figure 2d. Survival Curve for Time to Censoring, in Days, by Censoring Reason: Advair Diskus (with Prior Asthma) to Airduo Resplick in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018<sup>1</sup>



<sup>1</sup>No patients were censored due to query end.

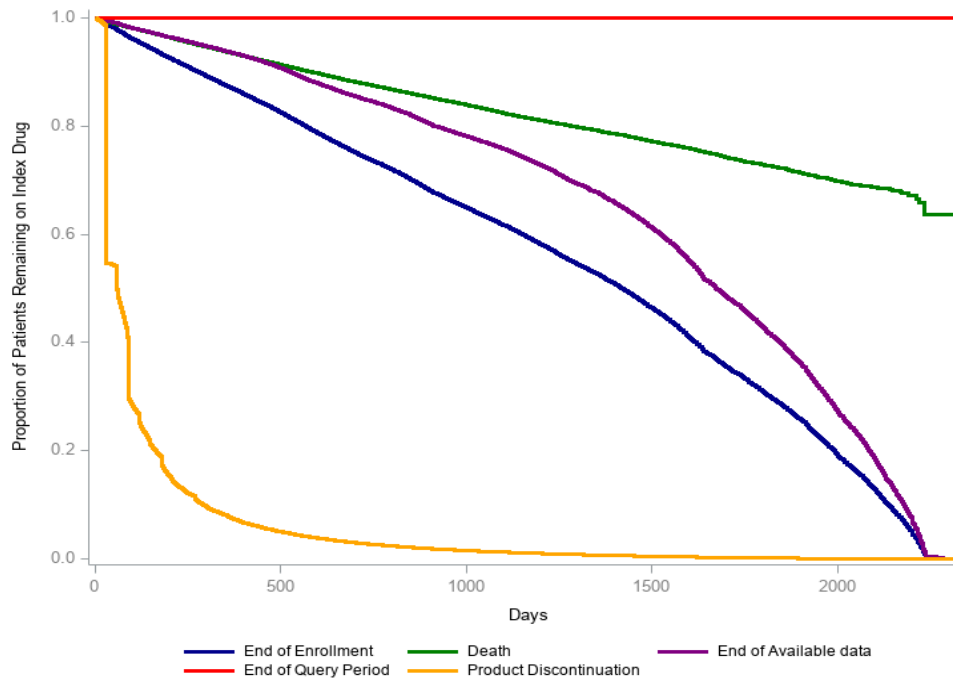


Figure 2e. Survival Curve for Time to Censoring, in Days, by Censoring Reason: Advair Diskus (with Prior COPD) to Breo Ellipta in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018<sup>1</sup>



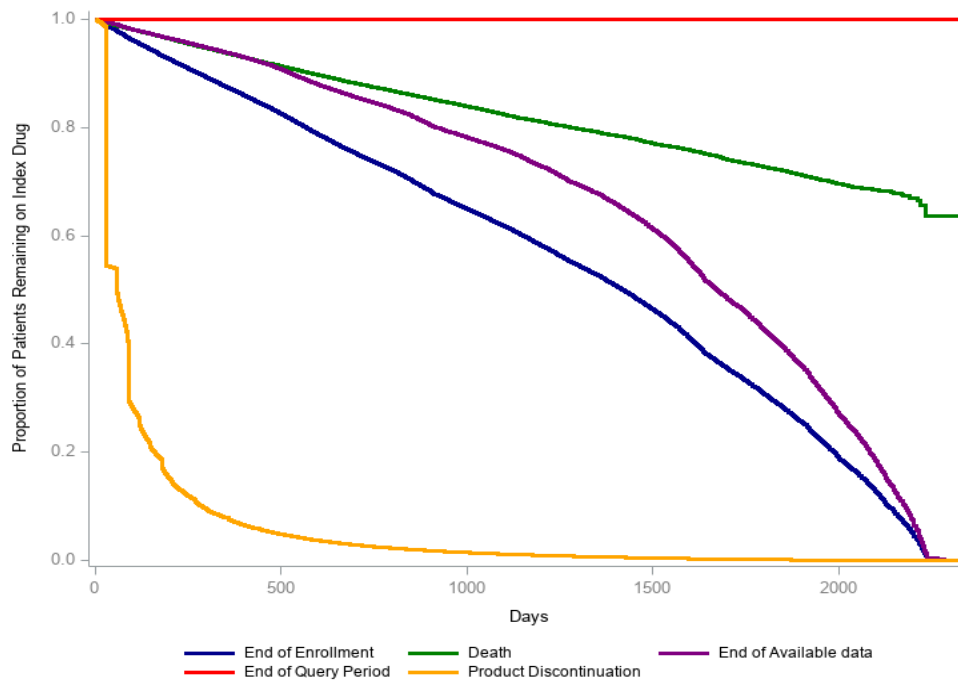
<sup>1</sup>No patients were censored due to query end.

Figure 2f. Survival Curve for Time to Censoring, in Days, by Censoring Reason: Advair Diskus (with Prior COPD) to Symbicort in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018<sup>1</sup>



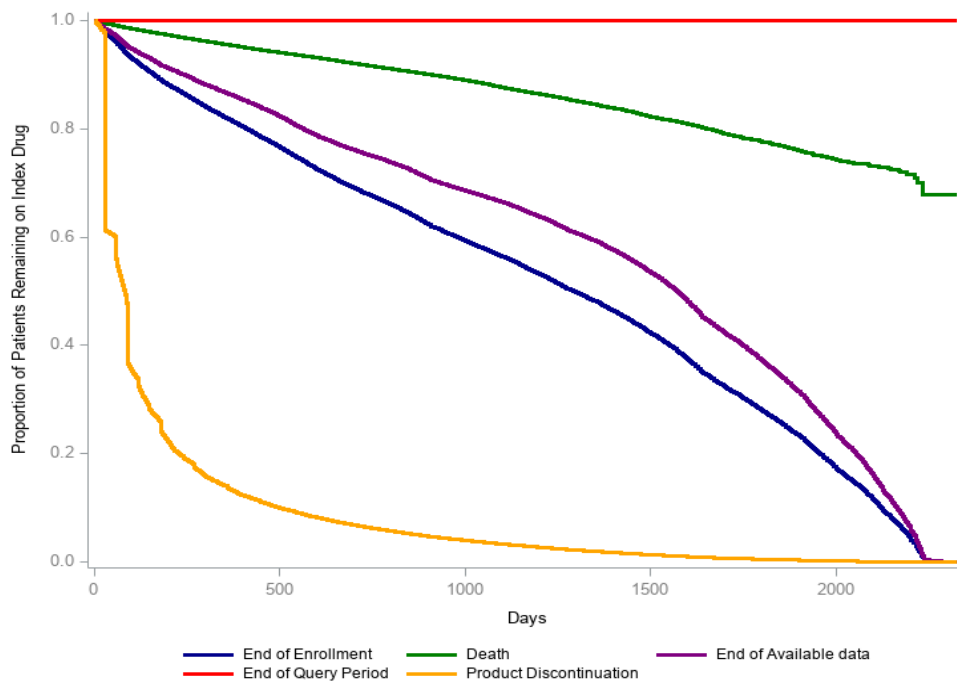
<sup>1</sup>No patients were censored due to query end.

Figure 2g. Survival Curve for Time to Censoring, in days, by Censoring Reason: Advair Diskus (with Prior COPD) to Other ICS/LABA (Advair HFA or Dulera) in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018<sup>1</sup>



<sup>1</sup>No patients were censored due to query end.

Figure 2h. Survival Curve for Time to Censoring, in days, by Censoring Reason: Advair Diskus (with Prior COPD) to Airduo Resplick in the Sentinel Distributed Database (SDD) from May 10, 2013 - September 30, 2018<sup>1</sup>



<sup>1</sup>No patients were censored due to query end.

**Appendix A. Dates of Available Data for Each Data Partner (DP) as of Request Distribution Date (September 30, 2018)**

DP ID	DP Start <sup>1</sup>	DP End <sup>1</sup>
DP01	06/01/2007	07/31/2019
DP02	01/01/2000	02/28/2019
DP03	01/01/2000	04/30/2019
DP04	01/01/2008	09/30/2019
DP05	01/01/2006	06/30/2019
DP06	01/01/2000	12/31/2017
DP07	01/01/2010	06/30/2019
DP08	01/01/2005	07/31/2018
DP09	01/01/2000	04/30/2018
DP10	01/01/2000	03/31/2019
DP11	01/01/2000	01/31/2019
DP12	01/01/2000	07/31/2019
DP13	01/01/2004	08/31/2019
DP14	01/01/2008	03/31/2019
DP15	01/01/2000	06/30/2019
DP16	01/01/2012	06/30/2018

<sup>1</sup>The start and end dates are based on the minimum and maximum dates within each DP. The month with the maximum date must have at least 80% of the number of records in the previous month.

**Appendix B. List of Generic and Brand Name Medical Products Used to Define Index Exposure in this Request**

---

<b>Generic Name</b>	<b>Brand Name</b>
fluticasone propionate/salmeterol xinafoate	Advair Diskus
budesonide/formoterol fumarate	Symbicort
mometasone furoate/formoterol fumarate	Dulera
fluticasone propionate/salmeterol xinafoate	Advair HFA
fluticasone furoate/vilanterol trifenate	Breo Ellipta
fluticasone propionate/salmeterol xinafoate	Airduo RespiClick

**Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Inclusion and Exclusion Criteria in this Request**

Code	Description	Code Type	Code Category
<b>Asthma</b>			
493	Extrinsic asthma, unspecified	ICD-9-CM	Diagnosis
493.1	Intrinsic asthma, unspecified	ICD-9-CM	Diagnosis
493.02	Extrinsic asthma, with (acute) exacerbation	ICD-9-CM	Diagnosis
493.12	Intrinsic asthma, with (acute) exacerbation	ICD-9-CM	Diagnosis
493.01	Extrinsic asthma with status asthmaticus	ICD-9-CM	Diagnosis
493.11	Intrinsic asthma with status asthmaticus	ICD-9-CM	Diagnosis
493.92	Asthma, unspecified, with (acute) exacerbation	ICD-9-CM	Diagnosis
493.91	Asthma, unspecified with status asthmaticus	ICD-9-CM	Diagnosis
493.9	Asthma, unspecified, unspecified status	ICD-9-CM	Diagnosis
493.82	Cough variant asthma	ICD-9-CM	Diagnosis
493.2	Chronic obstructive asthma, unspecified	ICD-9-CM	Diagnosis
493.21	Chronic obstructive asthma with status asthmaticus	ICD-9-CM	Diagnosis
493.22	Chronic obstructive asthma, with (acute) exacerbation	ICD-9-CM	Diagnosis
J45	Asthma	ICD-10-CM	Diagnosis
J45.2	Mild intermittent asthma	ICD-10-CM	Diagnosis
J45.20	Mild intermittent asthma, uncomplicated	ICD-10-CM	Diagnosis
J45.21	Mild intermittent asthma with (acute) exacerbation	ICD-10-CM	Diagnosis
J45.22	Mild intermittent asthma with status asthmaticus	ICD-10-CM	Diagnosis
J45.3	Mild persistent asthma	ICD-10-CM	Diagnosis
J45.30	Mild persistent asthma, uncomplicated	ICD-10-CM	Diagnosis
J45.31	Mild persistent asthma with (acute) exacerbation	ICD-10-CM	Diagnosis
J45.32	Mild persistent asthma with status asthmaticus	ICD-10-CM	Diagnosis
J45.4	Moderate persistent asthma	ICD-10-CM	Diagnosis
J45.40	Moderate persistent asthma, uncomplicated	ICD-10-CM	Diagnosis
J45.41	Moderate persistent asthma with (acute) exacerbation	ICD-10-CM	Diagnosis
J45.42	Moderate persistent asthma with status asthmaticus	ICD-10-CM	Diagnosis
J45.5	Severe persistent asthma	ICD-10-CM	Diagnosis
J45.50	Severe persistent asthma, uncomplicated	ICD-10-CM	Diagnosis
J45.51	Severe persistent asthma with (acute) exacerbation	ICD-10-CM	Diagnosis
J45.52	Severe persistent asthma with status asthmaticus	ICD-10-CM	Diagnosis
J45.9	Other and unspecified asthma	ICD-10-CM	Diagnosis
J45.90	Unspecified asthma	ICD-10-CM	Diagnosis
J45.901	Unspecified asthma with (acute) exacerbation	ICD-10-CM	Diagnosis
J45.902	Unspecified asthma with status asthmaticus	ICD-10-CM	Diagnosis
J45.909	Unspecified asthma, uncomplicated	ICD-10-CM	Diagnosis
J45.99	Other asthma	ICD-10-CM	Diagnosis
J45.991	Cough variant asthma	ICD-10-CM	Diagnosis
J45.998	Other asthma	ICD-10-CM	Diagnosis
493.91	Asthma, unspecified with status asthmaticus	ICD-9-CM	Diagnosis
493.92	Asthma, unspecified, with (acute) exacerbation	ICD-9-CM	Diagnosis
493.01	Extrinsic asthma with status asthmaticus	ICD-9-CM	Diagnosis
493.02	Extrinsic asthma, with (acute) exacerbation	ICD-9-CM	Diagnosis
493.11	Intrinsic asthma with status asthmaticus	ICD-9-CM	Diagnosis
493.12	Intrinsic asthma, with (acute) exacerbation	ICD-9-CM	Diagnosis
J45.21	Mild intermittent asthma with (acute) exacerbation	ICD-10-CM	Diagnosis
J45.22	Mild intermittent asthma with status asthmaticus	ICD-10-CM	Diagnosis
J45.31	Mild persistent asthma with (acute) exacerbation	ICD-10-CM	Diagnosis
J45.32	Mild persistent asthma with status asthmaticus	ICD-10-CM	Diagnosis
J45.41	Moderate persistent asthma with (acute) exacerbation	ICD-10-CM	Diagnosis
J45.42	Moderate persistent asthma with status asthmaticus	ICD-10-CM	Diagnosis

**Appendix C. List of International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Diagnosis Codes Used to Define Inclusion and Exclusion Criteria in this Request**

<b>Code</b>	<b>Description</b>	<b>Code Type</b>	<b>Code Category</b>
J45.51	Severe persistent asthma with (acute) exacerbation	ICD-10-CM	Diagnosis
J45.52	Severe persistent asthma with status asthmaticus	ICD-10-CM	Diagnosis
J45.901	Unspecified asthma with (acute) exacerbation	ICD-10-CM	Diagnosis
J45.902	Unspecified asthma with status asthmaticus	ICD-10-CM	Diagnosis
<b>Chronic Obstructive Pulmonary Disease (COPD)</b>			
490	Bronchitis, not specified as acute or chronic	ICD-9-CM	Diagnosis
491	Simple chronic bronchitis	ICD-9-CM	Diagnosis
491.1	Mucopurulent chronic bronchitis	ICD-9-CM	Diagnosis
491.2	Obstructive chronic bronchitis, without exacerbation	ICD-9-CM	Diagnosis
491.21	Obstructive chronic bronchitis, with (acute) exacerbation	ICD-9-CM	Diagnosis
491.22	Obstructive chronic bronchitis with acute bronchitis	ICD-9-CM	Diagnosis
491.8	Other chronic bronchitis	ICD-9-CM	Diagnosis
491.9	Unspecified chronic bronchitis	ICD-9-CM	Diagnosis
492	Emphysematous bleb	ICD-9-CM	Diagnosis
492.8	Other emphysema	ICD-9-CM	Diagnosis
496	Chronic airway obstruction, not elsewhere classified	ICD-9-CM	Diagnosis
J40	Bronchitis, not specified as acute or chronic	ICD-10-CM	Diagnosis
J41	Simple and mucopurulent chronic bronchitis	ICD-10-CM	Diagnosis
J41.0	Simple chronic bronchitis	ICD-10-CM	Diagnosis
J41.1	Mucopurulent chronic bronchitis	ICD-10-CM	Diagnosis
J41.8	Mixed simple and mucopurulent chronic bronchitis	ICD-10-CM	Diagnosis
J42	Unspecified chronic bronchitis	ICD-10-CM	Diagnosis
J43	Emphysema	ICD-10-CM	Diagnosis
J43.1	Panlobular emphysema	ICD-10-CM	Diagnosis
J43.2	Centrilobular emphysema	ICD-10-CM	Diagnosis
J43.8	Other emphysema	ICD-10-CM	Diagnosis
J43.9	Emphysema, unspecified	ICD-10-CM	Diagnosis
J44	Other chronic obstructive pulmonary disease	ICD-10-CM	Diagnosis
J44.0	Chronic obstructive pulmonary disease with acute lower respiratory infection	ICD-10-CM	Diagnosis
J44.1	Chronic obstructive pulmonary disease with (acute) exacerbation	ICD-10-CM	Diagnosis
J44.9	Chronic obstructive pulmonary disease, unspecified	ICD-10-CM	Diagnosis
491.22	Obstructive chronic bronchitis with acute bronchitis	ICD-9-CM	Diagnosis
491.21	Obstructive chronic bronchitis, with (acute) exacerbation	ICD-9-CM	Diagnosis
J44.0	Chronic obstructive pulmonary disease with acute lower respiratory infection	ICD-10-CM	Diagnosis
J44.1	Chronic obstructive pulmonary disease with (acute) exacerbation	ICD-10-CM	Diagnosis



**Appendix D.1. Query Design Specifications for Utilization Cohorts in this Request**

This request utilized Cohort Identification and Descriptive Analysis (CIDA) module version 9.3.0 to evaluate switch patterns between brand inhaled corticosteroids/long acting  $\beta$ 2 agonist (ICS/LABA) medications in the Sentinel Distributed Database (SDD).

**Query period:** May 10, 2013 - September 30, 2018  
**Coverage requirement:** Medical and Drug Coverage  
**Pre-index enrollment requirement:** 365 days  
**Post-index enrollment requirement:** 0 days  
**Enrollment gap:** 45 days  
**Age groups:** 4-11, 12-18, 19-39, 40-64, 65+ years  
**Stratifications:** None

Switching Groups									Inclusion Criteria								
Scenario	Exposure Group	Cohort definition	Episode Gap and Uptake Type Date	Product Approval Date	Product Marketing Date	Other Product Date	Censoring Criteria	Criteria	Inclusion group	Care setting	Principal Diagnosis Position	Evaluation		Exclusion reference date for dispensings	Number of instances the criteria should be found in evaluation period	Forced Days supply to attached to dispensings	
												period start (days)	period end (days)				
1	Advair Diskus (with prior asthma)	Include all valid exposure episodes	30 days	N/A	N/A	N/A	N/A	Disenrollment, Death, Query End Date, Data Partner (DP), End Date	Inclusion	Asthma	Any	Any	-365	0	N/A	1	N/A
									Exclusion	Chronic Obstructive Pulmonary Didsorder (COPD)	Any	Any	-365	0	N/A	1	N/A
									Exclusion	Advair Diskus	N/A	N/A	-365	-1	Evaluation period should search for only evidence of a dispensing date	1	N/A
									Exclusion	COPD	Any	Any	-365	0	N/A	1	N/A
2	Breo Ellipta (with prior asthma)	Include all valid exposure episodes	30 days	N/A	N/A	N/A	N/A	Disenrollment, Death, Query End Date, DP End Date	Exclusion	Breo Ellipta	N/A	N/A	-365	-1	Evaluation period should search for only evidence of a dispensing date	1	N/A
									Inclusion	Asthma	Any	Any	-365	0	N/A	1	N/A

Appendix D.1. Query Design Specifications for Utilization Cohorts in this Request

Switching Groups									Inclusion Criteria								
Scenario	Exposure Group	Cohort definition	Episode Gap and Type	Uptake Date	Product Approval Date	Product Marketing Date	Other Product Date	Censoring Criteria	Criteria	Inclusion group	Care setting	Principal Diagnosis Position	Evaluation		Exclusion reference date for dispensings	Number of instances the criteria should be found in evaluation period	Forced Days supply to attached to dispensings
													period start (days)	period end (days)			
3	Symbicort (with prior asthma)	Include all valid exposure episodes	30 days	N/A	N/A	N/A	N/A	Disenrollment, Death, Query End Date, DP End Date	Inclusion	Asthma	Any	Any	-365	0	N/A	1	N/A
									Exclusion	COPD	Any	Any	-365	0	N/A	1	N/A
									Exclusion	Symbicort	N/A	N/A	-365	-1	Evaluation period should search for only evidence of a dispensing date	1	N/A
4	Airduo Respiclick (with prior asthma)	Include all valid exposure episodes	30 days	N/A	1/27/17	N/A	N/A	Disenrollment, Death, Query End Date, DP End Date	Inclusion	Asthma	Any	Any	-365	0	N/A	1	N/A
									Exclusion	COPD	Any	Any	-365	0	N/A	1	N/A
									Exclusion	Airduo Respiclick	N/A	N/A	-365	-1	Evaluation period should search for only evidence of a dispensing date	1	N/A
5	Other ICS/LABA (Advair HFA or Dulera - with prior asthma)	Include all valid exposure episodes	30 days	N/A	N/A	N/A	N/A	Disenrollment, Death, Query End Date, DP End Date	Inclusion	Asthma	Any	Any	-365	0	N/A	1	N/A
									Exclusion	COPD	Any	Any	-365	0	N/A	1	N/A
									Exclusion	Other ICS/LABA (Advair HFA or Dulera)	N/A	N/A	-365	-1	Evaluation period should search for only evidence of a dispensing date	1	N/A

Appendix D.1. Query Design Specifications for Utilization Cohorts in this Request

Switching Groups									Inclusion Criteria								
Scenario	Exposure Group	Cohort definition	Episode Gap and Uptake Type Date	Product Approval Date	Product Marketing Date	Other Product Date	Censoring Criteria	Criteria	Inclusion group	Care setting	Principal Diagnosis Position	Evaluation period start (days)	Evaluation period end (days)	Exclusion reference date for dispensings	Number of instances the criteria should be found in evaluation period	Forced Days supply to attached to dispensings	
																	Criteria
6	Advair Diskus (with prior COPD)	Include all valid exposure episodes	30 days	N/A	N/A	N/A	N/A	Disenrollment, Death, Query End Date, DP End Date	Inclusion	COPD	Any	Any	-365	0	N/A	1	N/A
									Exclusion	Asthma	Any	Any	-365	0	N/A	1	N/A
									Exclusion	Advair Diskus	N/A	N/A	-365	-1	Evaluation period should search for only evidence of a dispensing date	1	N/A
									Exclusion	Advair Diskus	N/A	N/A	-365	-1	Evaluation period should search for only evidence of a dispensing date	1	N/A
7	Breo Ellipta (with prior COPD)	Include all valid exposure episodes	30 days	N/A	N/A	N/A	N/A	Disenrollment, Death, Query End Date, DP End Date	Inclusion	COPD	Any	Any	-365	0	N/A	1	N/A
									Exclusion	Asthma	Any	Any	-365	0	N/A	1	N/A
									Exclusion	Breo Ellipta	N/A	N/A	-365	-1	Evaluation period should search for only evidence of a dispensing date	1	N/A
									Exclusion	Breo Ellipta	N/A	N/A	-365	-1	Evaluation period should search for only evidence of a dispensing date	1	N/A
8	Symbicort (with prior COPD)	Include all valid exposure episodes	30 days	N/A	1/27/17	N/A	N/A	Disenrollment, Death, Query End Date, DP End Date	Inclusion	COPD	Any	Any	-365	0	N/A	1	N/A
									Exclusion	Asthma	Any	Any	-365	0	N/A	1	N/A
									Exclusion	Symbicort	N/A	N/A	-365	-1	Evaluation period should search for only evidence of a dispensing date	1	N/A
									Exclusion	Symbicort	N/A	N/A	-365	-1	Evaluation period should search for only evidence of a dispensing date	1	N/A

Appendix D.1. Query Design Specifications for Utilization Cohorts in this Request

Switching Groups									Inclusion Criteria								
Scenario	Exposure Group	Cohort definition	Episode Gap and Uptake Type Date	Product Approval Date	Product Marketing Date	Other Product Date	Censoring Criteria	Criteria	Inclusion group	Care setting	Principal Diagnosis Position	Evaluation		Exclusion reference date for dispensings	Number of instances the criteria should be found in evaluation period	Forced Days supply to attached to dispensings	
												period start (days)	period end (days)				
9	Airduo Resplick (with prior COPD)	Include all valid exposure episodes	30 days	N/A	N/A	N/A	N/A	Disenrollment, Death, Query End Date, DP End Date	Inclusion	COPD	Any	Any	-365	0	N/A	1	N/A
									Exclusion	Asthma	Any	Any	-365	0	N/A	1	N/A
									Exclusion	Airduo Resplick	N/A	N/A	-365	-1	Evaluation period should search for only evidence of a dispensing date	1	N/A
10	Other ICS/LABA (Advair HFA or Dulera - with prior COPD)	Include all valid exposure episodes	30 days	N/A	N/A	N/A	N/A	Disenrollment, Death, Query End Date, DP End Date	Inclusion	COPD	Any	Any	-365	0	N/A	1	N/A
									Exclusion	Asthma	Any	Any	-365	0	N/A	1	N/A
									Exclusion	Other ICS/LABA (Advair HFA or Dulera)	N/A	N/A	-365	-1	Evaluation period should search for only evidence of a dispensing date	1	N/A

International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), Healthcare Common Procedure Coding System (HCPCS), and Current Procedural Terminology (CPT-4) codes are provided by Optum360. National Drug Codes (NDCs) codes are checked against First Data Bank's "National Drug Data File (NDDF®) Plus."

**Appendix D.2. Query Design Specifications for the Switch Pattern Cohorts in this Request**

This request utilized the Cohort Identification and Descriptive Analysis (CIDA) module 9.3.0 to evaluate switch patterns between brand inhaled corticosteroids/long acting β2 agonist (ICS/LABA) medications in the Sentinel Distributed Database (SDD).

**Query period:** May 10, 2013 - September 30, 2018  
**Coverage requirement:** Medical and Drug Coverage  
**Pre-index enrollment requirement:** 365 days  
**Post-index enrollment requirement:** 0 days  
**Enrollment gap:** 45 days  
**Age groups:** 4-11, 12-18, 19-39, 40-64, 65+ years  
**Stratifications:** None

Scenario	Switch Evaluation Step Value	Switch Groups	Post-Index Enrollment Criteria in Switch Episodes	Switch Cohort Definition	Switch Pattern Cohort Inclusion Date	Switch Pattern Cohort Inclusion Strategy Indicator	Gap Tolerance (days)	Overlap Tolerance and Type	Switch Gap Inclusion Indicator	Censoring Criteria	Inclusion/Exclusion Criteria					Number of instances the criteria should be found in evaluation period	
											Criteria	Inclusion group	Care setting	Exclusion reference date for dispensings	Evaluation period start (days)		Evaluation period end (days)
1	0	Advair Diskus (with prior asthma)	0	All switch pattern episodes during the query period	N/A	SWITCHCOHORTINCLDATE used only as switch cohort entry date. First treatment episode RxDate is used as index for computing time to first switch.	30	100%	Y = Gaps between episodes will be counted as part of the overall switch pattern duration	Disenrollment, Death, Query End Date, DP End Date	Inclusion	Asthma	Any	N/A	-365	0	1
											Exclusion	Chronic Obstructive Pulmonary Disorder (COPD)	Any	N/A	-365	0	1
	1	Symbicort	0	0	0	0	1	Exclusion	Symbicort	Any	Evaluation period should search for only evidence of a dispensing date	0	0	1			
2	0	Advair Diskus (with prior asthma)	0	All switch pattern episodes during the query period	N/A	SWITCHCOHORTINCLDATE used only as switch cohort entry date. First treatment episode RxDate is used as index for computing time to first switch.	30	100%	Y = Gaps between episodes will be counted as part of the overall switch pattern duration	Disenrollment, Death, Query End Date, DP End Date	Inclusion	Asthma	Any	N/A	-365	0	1
											Exclusion	COPD	Any	N/A	-365	0	1
	1	Breo Ellipta	0	0	0	0	1	Exclusion	Breo Ellipta	Any	Evaluation period should search for only evidence of a dispensing date	0	0	1			

Appendix D.2. Query Design Specifications for the Switch Pattern Cohorts in this Request

Scenario	Switch Evaluation Step Value	Switch Groups	Post-Index Enrollment Criteria in Switch Episodes	Switch Cohort Definition	Switch Pattern Cohort Inclusion Date	Switch Pattern Cohort Inclusion Strategy Indicator	Gap Tolerance	Overlap Tolerance and Type	Switch Gap Inclusion Indicator	Censoring Criteria	Inclusion/Exclusion Criteria					Number of instances the criteria should be found in evaluation period	
											Criteria	Inclusion group	Care setting	Exclusion reference date for dispensings	Evaluation period start		Evaluation period end
3	0	Advair Diskus (with prior asthma)	0	All switch pattern episodes during the query period	1/27/2017	SWITCHCOHORTINCLDATE used only as switch cohort entry date. First treatment episode RxDate is used as index for computing time to first switch.	30	100%	Y = Gaps between episodes will be counted as part of the overall switch pattern duration	Disenrollment, Death, Query End Date, DP End Date	Inclusion	Asthma	Any	N/A	-365	0	1
											Exclusion	COPD	Any	N/A	-365	0	1
	1	Airduo Resplick	0	0	0	0	0	1	Exclusion	Airduo Resplick	Any	Evaluation period should search for only evidence of a dispensing date	0	0	1		
4	0	Advair Diskus (with prior asthma)	0	All switch pattern episodes during the query period	N/A	SWITCHCOHORTINCLDATE used only as switch cohort entry date. First treatment episode RxDate is used as index for computing time to first switch.	30	100%	Y = Gaps between episodes will be counted as part of the overall switch pattern duration	Disenrollment, Death, Query End Date, DP End Date	Inclusion	Asthma	Any	N/A	-365	0	1
											Exclusion	COPD	Any	N/A	-365	0	1
	1	Advair HFA or Dulera	0	0	0	0	0	1	Exclusion	Advair HFA or Dulera	Any	Evaluation period should search for only evidence of a dispensing date	0	0	1		
5	0	Advair Diskus (with prior COPD)	0	All switch pattern episodes during the query period	N/A	SWITCHCOHORTINCLDATE used only as switch cohort entry date. First treatment episode RxDate is used as index for computing time to first switch.	30	100%	Y = Gaps between episodes will be counted as part of the overall switch pattern duration	Disenrollment, Death, Query End Date, DP End Date	Inclusion	COPD	Any	N/A	-365	0	1
											Exclusion	Asthma	Any	N/A	-365	0	1
	1	Symbicort	0	0	0	0	0	1	Exclusion	Symbicort	Any	Evaluation period should search for only evidence of a dispensing date	0	0	1		

Appendix D.2. Query Design Specifications for the Switch Pattern Cohorts in this Request

Scenario	Switch Evaluation Step Value	Switch Groups	Post-Index Enrollment Criteria in Switch Episodes	Switch Cohort Definition	Switch Pattern Cohort Inclusion Date	Switch Pattern Cohort Inclusion Strategy Indicator	Gap Tolerance	Overlap Tolerance and Type	Switch Gap Inclusion Indicator	Censoring Criteria	Inclusion/Exclusion Criteria					Number of instances the criteria should be found in evaluation period	
											Criteria	Inclusion group	Care setting	Exclusion reference date for dispensings	Evaluation period start		Evaluation period end
6	0	Advair Diskus (with prior COPD)	0	All switch pattern episodes during the query period	N/A	SWITCHCOHORTINCLDATE used only as switch cohort entry date. First treatment episode RxDate is used as index for computing time to first switch.	30	100%	Y = Gaps between episodes will be counted as part of the overall switch pattern duration	Disenrollment, Death, Query End Date, DP End Date	Inclusion	COPD	Any	N/A	-365	0	1
											Exclusion	Asthma	Any	N/A	-365	0	1
	1	Breo Ellipta	0	0	0	0	0	1	Exclusion	Breo Ellipta	Any	Evaluation period should search for only evidence of a dispensing date	0	0	1		
7	0	Advair Diskus (with prior COPD)	0	All switch pattern episodes during the query period	1/27/2017	SWITCHCOHORTINCLDATE used only as switch cohort entry date. First treatment episode RxDate is used as index for computing time to first switch.	30	100%	Y = Gaps between episodes will be counted as part of the overall switch pattern duration	Disenrollment, Death, Query End Date, DP End Date	Inclusion	COPD	Any	N/A	-365	0	1
											Exclusion	Asthma	Any	N/A	-365	0	1
	1	Airduo Respiclick	0	0	0	0	0	1	Exclusion	Airduo Respiclick	Any	Evaluation period should search for only evidence of a dispensing date	0	0	1		
8	0	Advair Diskus (with prior COPD)	0	All switch pattern episodes during the query period	N/A	SWITCHCOHORTINCLDATE used only as switch cohort entry date. First treatment episode RxDate is used as index for computing time to first switch.	30	100%	Y = Gaps between episodes will be counted as part of the overall switch pattern duration	Disenrollment, Death, Query End Date, DP End Date	Inclusion	COPD	Any	N/A	-365	0	1
											Exclusion	Asthma	Any	N/A	-365	0	1
	1	Advair HFA or Dulera	0	0	0	0	0	1	Exclusion	Advair HFA or Dulera	Any	Evaluation period should search for only evidence of a dispensing date	0	0	1		

International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), Healthcare Common Procedure Coding System (HCPCS), and Current Procedural Terminology (CPT-4) codes are provided by Optum360. National Drug Codes (NDCs) codes are checked against First Data Bank's "National Drug Data File (NDDF®) Plus."