RJHealth

PIPELINE REVIEW

Botox® (onabotulinumtoxinA)

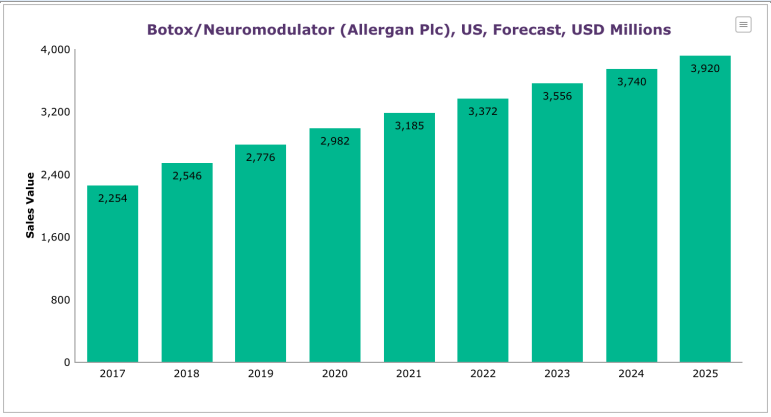
Botox® (onabotulinumtoxinA)			
Page	**Indication**	**Date Approved**	**Date Updated**
2	Upper Limb Muscle Spasticity	June 20, 2019, April 17, 2015, March 9, 2010	August 2, 2019
3	Lower Limb Muscle Spasticity	Jan 21, 2016	August 2, 2019
4	Overactive Bladder	Jan 18, 2013	August 2, 2019
5	Urinary Incontinence	Aug 24, 2011	August 2, 2019
6	Migraine	Oct 15, 2010	August 2, 2019
7	Axillary Hyperhidrosis	July 19, 2004	August 2, 2019
8	Spasmodic Torticollis (Cervical Dystonia)	Dec 21, 2000	August 2, 2019
9	Blepharospasm	Dec 30, 1989	August 2, 2019
10	Strabismus	Dec 29, 1989	August 2, 2019
Botox® Cosmetic (onabotulinumtoxinA)			
Page	**Indication**	**Date Approved**	**Date Updated**
11	Forehead Lines	Oct 2, 2017	August 2, 2019
12	Lateral Canthal Lines	Sep 11, 2013	August 2, 2019
13	Glabellar Lines	April 12, 2002	August 2, 2019

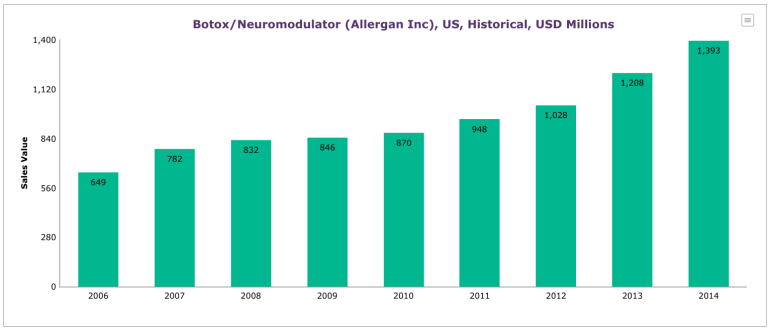
Drug Information		Regulatory Information	
Manufacturer:	Allergan	**Application Type:**	Supplemental BLA
Drug Brand Name:	Botox®	**Original Anticipated Approval (PDUFA):**	9/8/2019
		Regulatory Status:	Approved
Drug Generic Name:	onabotulinumtoxinA	**Regulatory Status Date:**	3/9/2010, 4/17/2015, 6/20/2019
		Regulatory Status Reason:	N/A
Drug Type:	Protein	**Orphan Drug Designation:**	12/6/1991
		FDA Fast Track Designation:	N/A
Route of Administration:	Intramuscular	**Breakthrough Therapy Designation**	N/A
		Priority Review Designation:	3/7/2019

Indication Details

Indication	Prevalence Type	Prevalence
Upper Limb Muscle Spasticity	U.S.	N/A
	Global	> 12,000,000

Sales Forecast





Source: GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: August 2, 2019.

Comments Section

On March 9, 2010, FDA approved Botox® (onabotulinumtoxinA) for the treatment of upper limb spasticity.

On April 17, 2015, FDA expanded the indication for the treatment of upper limb spasticity in adult patients to include the treatment of the thumb flexors (adductor pollicis and flexor pollicis longus).

On June 20, 2019, FDA approved Botox® (onabotulinumtoxinA) for the treatment of upper limb spasticity in pediatric patients 2 to 17 years of age.

It is estimated that spasticity affects more than 12 million people worldwide.*
About 80% of people with cerebral palsy (CP) have spasticity. An estimated 500,000 people in the United States have CP.*
About 80% of people with multiple sclerosis (MS) have spasticity. An estimated 400,000 people in the United States have MS.*
The prevalence of spasticity after stroke ranges from 30% to 80% of stroke survivors.**

Sources:

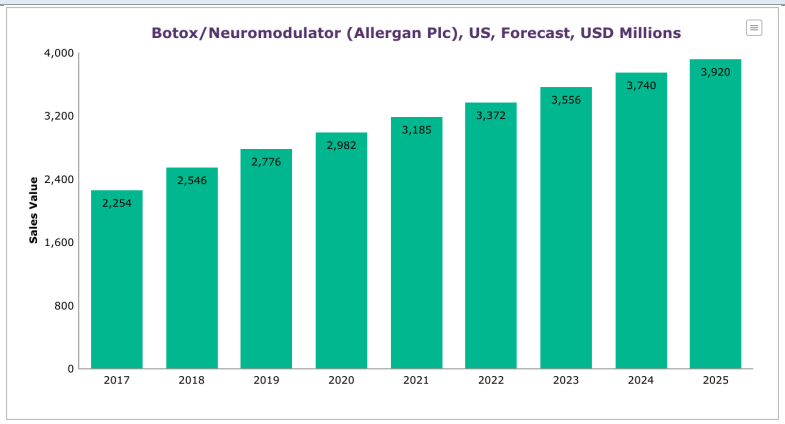
BOTOX® (onabotulinumtoxinA) [Package Insert]. Madison, NJ: Allergan, Inc.; 2019.
"Drugs@FDA: FDA Approved Drug Products - Botox." *U.S. Food & Drug Administration*, www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&ApplNo=103000. Accessed: July 29, 2019.
GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: August 2, 2019.
** Kuo CL, Hu GC. Post-stroke Spasticity: A Review of Epidemiology, Pathophysiology,and Treatments. *International Journal of Gerontology* 12 (2018) 280-284. Available at: https://www.sciencedirect.com/science/article/pii/S1873959818300073. Accessed: August 1, 2019.
* "Spasticity." *American Association of Neurological Surgeons*, www.aans.org/Patients/Neurosurgical-Conditions-and-Treatments/Spasticity. Accessed: August 1, 2019.

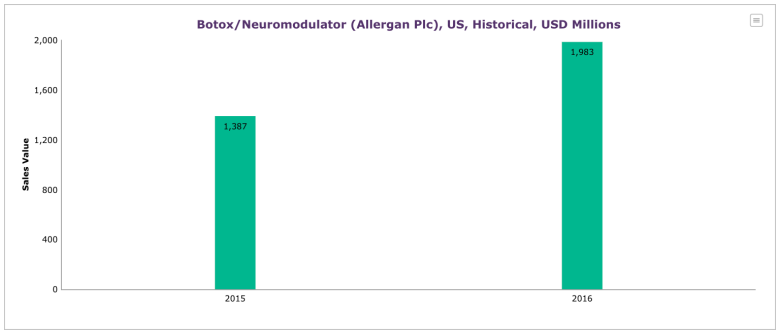
Drug Information		Regulatory Information	
Manufacturer:	Allergan	**Application Type:**	Supplemental BLA
Drug Brand Name:	Botox®	**Original Anticipated Approval (PDUFA):**	1/7/2020
		Regulatory Status:	Approved, Under Review
Drug Generic Name:	onabotulinumtoxinA	**Regulatory Status Date:**	1/21/2016, 3/7/2019
		Regulatory Status Reason:	See Comments Section below
Drug Type:	Protein	**Orphan Drug Designation:**	12/6/1991
		FDA Fast Track Designation:	N/A
Route of Administration:	Intramuscular	**Breakthrough Therapy Designation**	N/A
		Priority Review Designation:	N/A

Indication Details

Indication	Prevalence Type	Prevalence
Lower Limb Muscle Spasticity	U.S.	N/A
	Global	> 12,000,000

Sales Forecast





Source: GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: August 2, 2019.

Comments Section

On January 21, 2016, FDA approved Botox® (onabotulinumtoxinA) for the treatment of lower limb spasticity in adult patients.

On March 7, 2019, FDA accepted the Supplemental BLA to expand the Botox® (onabotulinumtoxinA) indication for the treatment of pediatric patients (2 years of age and older) with upper and lower limb spasticity.
The pediatric lower limb spasticity indication will undergo a standard 10-month review with a PDUFA date of January 7, 2020.
The pediatric upper limb spasticity indication was designated a 6-month priority review and was approved on June 20, 2019.

It is estimated that spasticity affects more than 12 million people worldwide.*
About 80% of people with cerebral palsy (CP) have spasticity. An estimated 500,000 people in the United States have CP.*
About 80% of people with multiple sclerosis (MS) have spasticity. An estimated 400,000 people in the United States have MS.*
The prevalence of spasticity after stroke ranges from 30% to 80% of stroke survivors.**

Sources:

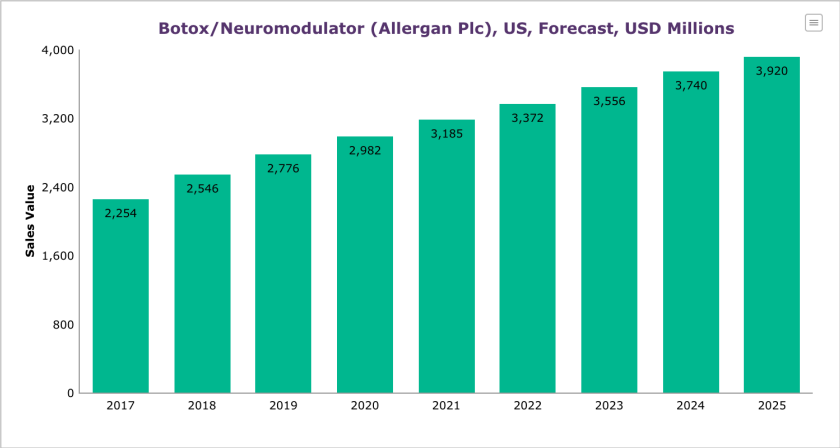
BOTOX® (onabotulinumtoxinA) [Package Insert]. Madison, NJ: Allergan, Inc.; 2019.
"Drugs@FDA: FDA Approved Drug Products - Botox." *U.S. Food & Drug Administration*, www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&ApplNo=103000. Accessed: July 29, 2019.
GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: August 2, 2019.
** Kuo CL, Hu GC. Post-stroke Spasticity: A Review of Epidemiology, Pathophysiology,and Treatments. *International Journal of Gerontology* 12 (2018) 280-284. Available at: https://www.sciencedirect.com/science/article/pii/S1873959818300073. Accessed: August 1, 2019.
* "Spasticity." *American Association of Neurological Surgeons*, www.aans.org/Patients/Neurosurgical-Conditions-and-Treatments/Spasticity. Accessed: August 1, 2019.

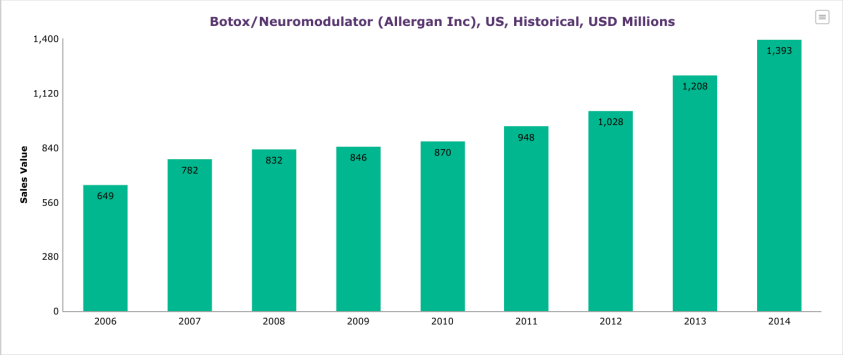
Drug Information		Regulatory Information	
Manufacturer:	Allergan	**Application Type:**	Supplemental BLA
Drug Brand Name:	Botox®	**Original Anticipated Approval (PDUFA):**	N/A
		Regulatory Status:	Approved
Drug Generic Name:	onabotulinumtoxinA	**Regulatory Status Date:**	1/18/2013
		Regulatory Status Reason:	N/A
Drug Type:	Protein	**Orphan Drug Designation:**	N/A
		FDA Fast Track Designation:	N/A
Route of Administration:	Intradetrusor	**Breakthrough Therapy Designation**	N/A
		Priority Review Designation:	N/A

Indication Details

Indication	Prevalence Type	Prevalence
Overactive Bladder	U.S.	57,846,111
	Global	366,525,224

Sales Forecast





Source: GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: August 2, 2019.

Comments Section

On January 18, 2013, FDA approved Botox® (onabotulinumtoxinA) for the treatment of overactive bladder (OAB) with symptoms of urge urinary incontinence, urgency, and frequency, in adults who have had an inadequate response to or are intolerant of an anticholinergic medication.

Sources:

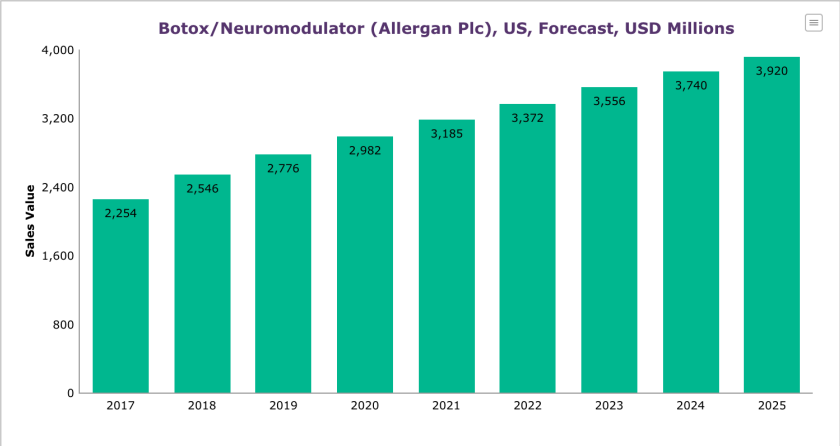
BOTOX® (onabotulinumtoxinA) [Package Insert]. Madison, NJ: Allergan, Inc.; 2019.
"Drugs@FDA: FDA Approved Drug Products - Botox." *U.S. Food & Drug Administration*, www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&ApplNo=103000. Accessed: July 29, 2019.
GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: July 29, 2019.

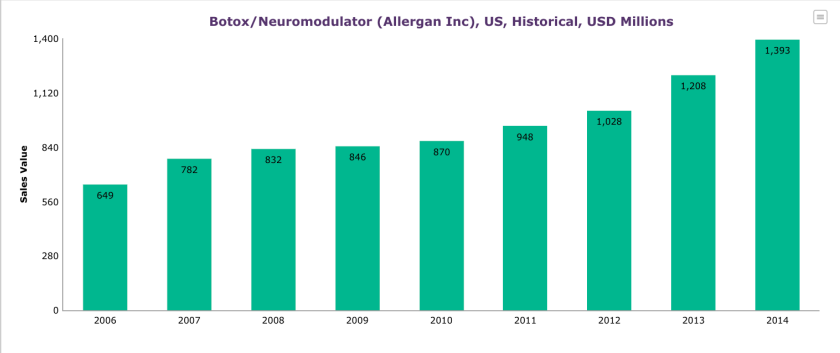
Drug Information		Regulatory Information	
Manufacturer:	Allergan	**Application Type:**	Supplemental BLA
Drug Brand Name:	Botox®	**Original Anticipated Approval (PDUFA):**	N/A
		Regulatory Status:	Approved
Drug Generic Name:	onabotulinumtoxinA	**Regulatory Status Date:**	8/24/2011
		Regulatory Status Reason:	N/A
Drug Type:	Protein	**Orphan Drug Designation:**	N/A
		FDA Fast Track Designation:	N/A
Route of Administration:	Intradetrusor	**Breakthrough Therapy Designation**	N/A
		Priority Review Designation:	N/A

Indication Details

Indication	Prevalence Type	Prevalence
Urinary Incontinence	U.S.	89,744,645
	Global	650,720,181

Sales Forecast





Source: GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: August 2, 2019.

Comments Section

On August 24, 2011, FDA approved Botox® (onabotulinumtoxinA) for the treatment of adults with urinary incontinence due to detrusor overactivity associated with a neurologic condition [e.g., spinal cord injury (SCI), multiple sclerosis(MS)] who have an inadequate response to or are intolerant of an anticholinergic medication.

Sources:

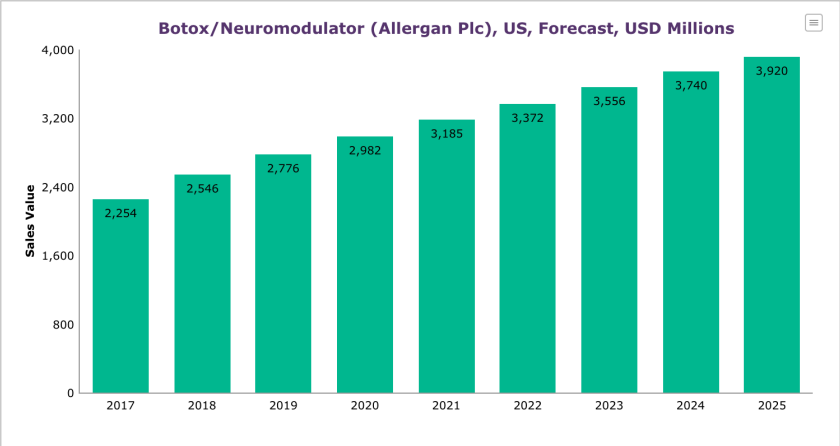
BOTOX® (onabotulinumtoxinA) [Package Insert]. Madison, NJ: Allergan, Inc.; 2019.
"Drugs@FDA: FDA Approved Drug Products - Botox." *U.S. Food & Drug Administration*, www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&ApplNo=103000. Accessed: July 29, 2019.
GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: July 29, 2019.

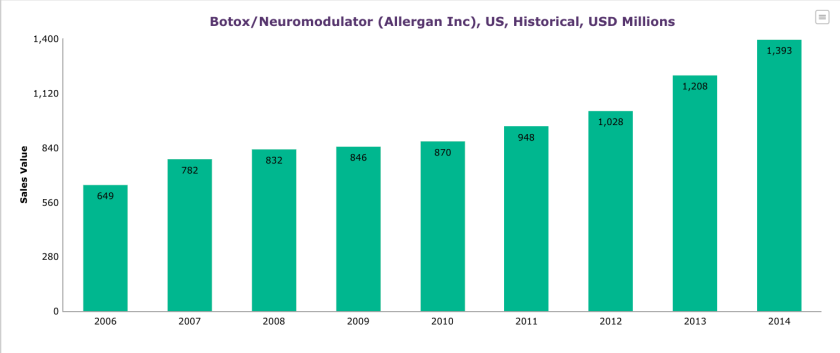
Drug Information		Regulatory Information	
Manufacturer:	Allergan	**Application Type:**	Supplemental BLA
Drug Brand Name:	Botox®	**Original Anticipated Approval (PDUFA):**	N/A
		Regulatory Status:	Approved
Drug Generic Name:	onabotulinumtoxinA	**Regulatory Status Date:**	10/15/2010
		Regulatory Status Reason:	N/A
Drug Type:	Protein	**Orphan Drug Designation:**	N/A
		FDA Fast Track Designation:	N/A
Route of Administration:	Intramuscular	**Breakthrough Therapy Designation**	N/A
		Priority Review Designation:	N/A

Indication Details

Indication	Prevalence Type	Prevalence
Migraine	U.S.	30,759,168
	Global	471,520,312

Sales Forecast





Source: GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: August 2, 2019.

Comments Section

On October 15, 2010, FDA approved Botox® (onabotulinumtoxinA) for the prophylaxis of headaches in adults with chronic migraine (≥15 days per month with headache lasting 4 hours a day or longer).

Sources:

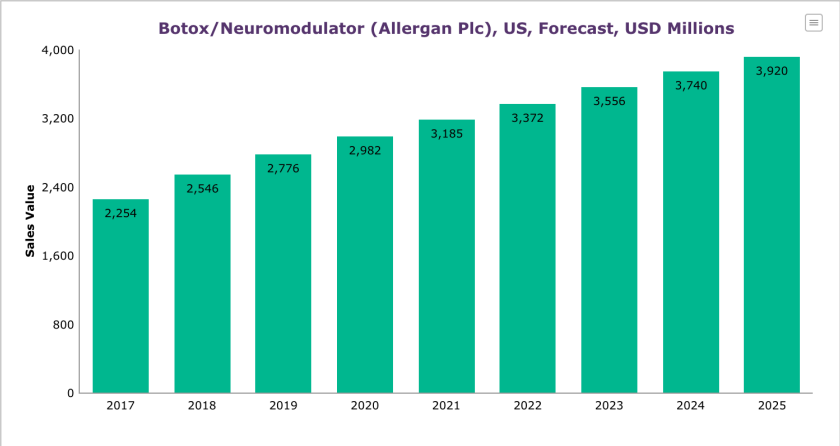
BOTOX® (onabotulinumtoxinA) [Package Insert]. Madison, NJ: Allergan, Inc.; 2019.
"Drugs@FDA: FDA Approved Drug Products - Botox." *U.S. Food & Drug Administration*, www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&ApplNo=103000. Accessed: July 29, 2019.
GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: July 29, 2019.

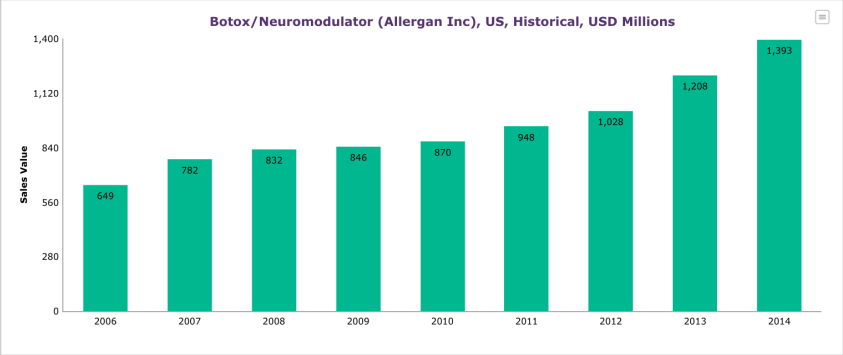
Drug Information		Regulatory Information	
Manufacturer:	Allergan	**Application Type:**	Supplemental BLA
Drug Brand Name:	Botox®	**Original Anticipated Approval (PDUFA):**	N/A
		Regulatory Status:	Approved
Drug Generic Name:	onabotulinumtoxinA	**Regulatory Status Date:**	7/19/2004
		Regulatory Status Reason:	N/A
Drug Type:	Protein	**Orphan Drug Designation:**	N/A
		FDA Fast Track Designation:	N/A
Route of Administration:	Intradermal	**Breakthrough Therapy Designation**	N/A
		Priority Review Designation:	N/A

Indication Details

Indication	Prevalence Type	Prevalence
Axillary Hyperhidrosis	U.S.	N/A
	Global	N/A

Sales Forecast





Source: GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: August 2, 2019.

Comments Section

On July 19, 2004, FDA approved Botox® (onabotulinumtoxinA) for the treatment of severe axillary hyperhidrosis that is inadequately managed by topical agents in adult patients.

The prevalence of hyperhidrosis in the United States is estimated to be 4.8%, or approximately 15.3 million people.*
About 51% of hyperhidrosis patients have axillary hyperhidrosis alone or in combination with hyperhidrosis in another location.*

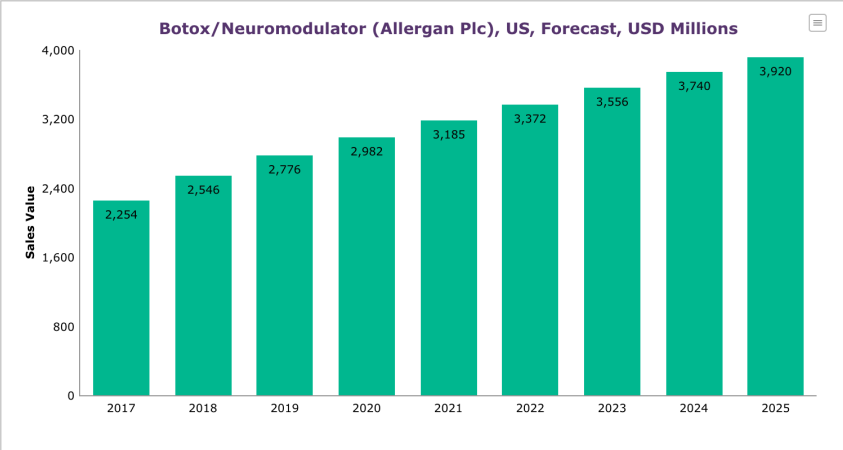
Sources:
BOTOX® (onabotulinumtoxinA) [Package Insert]. Madison, NJ: Allergan, Inc.; 2019.
"Drugs@FDA: FDA Approved Drug Products - Botox." *U.S. Food & Drug Administration*, www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&ApplNo=103000. Accessed: July 29, 2019.
* "Epidemiology of Primary Hyperhidrosis." *International Hyperhidrosis Society*, www.sweathelp.org/about-hyperhidrosis/epidemiology-of-primary-hyperhidrosis.html. Accessed: August 1, 2019.
GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: July 29, 2019.

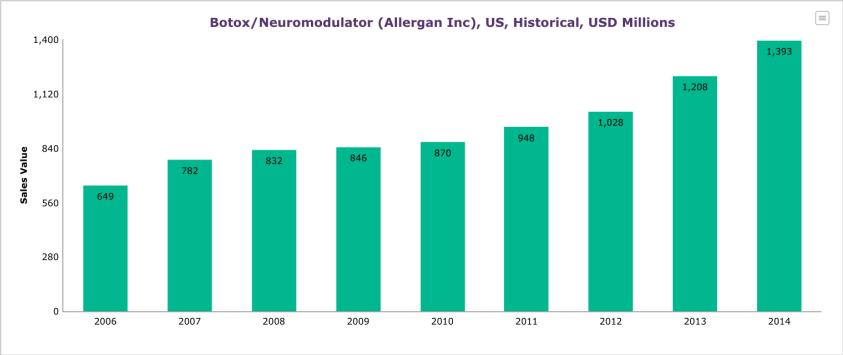
Drug Information		Regulatory Information	
Manufacturer:	Allergan	**Application Type:**	Supplemental BLA
Drug Brand Name:	Botox®	**Original Anticipated Approval (PDUFA):**	N/A
		Regulatory Status:	Approved
Drug Generic Name:	onabotulinumtoxinA	**Regulatory Status Date:**	12/21/2000
		Regulatory Status Reason:	N/A
Drug Type:	Protein	**Orphan Drug Designation:**	8/20/1986
		FDA Fast Track Designation:	N/A
Route of Administration:	Intramuscular	**Breakthrough Therapy Designation**	N/A
		Priority Review Designation:	N/A

Indication Details

Indication	Prevalence Type	Prevalence
Spasmodic Torticollis (Cervical Dystonia)	U.S.	60,000
	Global	N/A

Sales Forecast





Source: GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: August 2, 2019.

Comments Section

On December 21, 2000, FDA approved Botox® (onabotulinumtoxinA) for the treatment of cervical dystonia in adults to decrease the severity of abnormal head position and neck pain associated with cervical dystonia.

Cervical dystonia is estimated to affect about 60,000 people in the United States.*

Sources:

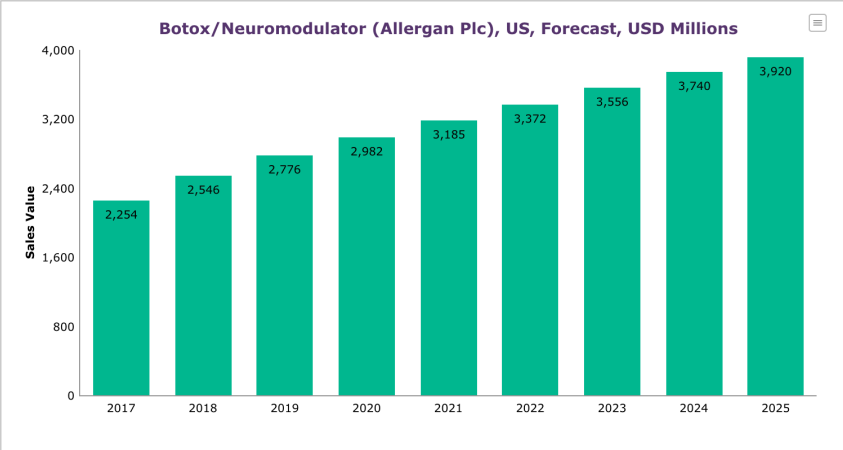
BOTOX® (onabotulinumtoxinA) [Package Insert]. Madison, NJ: Allergan, Inc.; 2019.
* "Cervical Dystonia." *NORD - National Organization for Rare Disorders*, rarediseases.org/rare-diseases/cervical-dystonia/. Accessed: August 1, 2019.
"Drugs@FDA: FDA Approved Drug Products - Botox." *U.S. Food & Drug Administration*, www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&ApplNo=103000. Accessed: July 29, 2019.
GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: July 29, 2019.

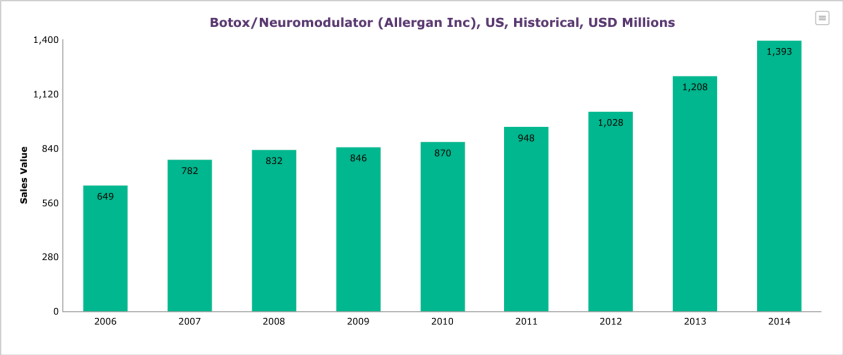
Drug Information		Regulatory Information	
Manufacturer:	Allergan	**Application Type:**	BLA
Drug Brand Name:	Botox®	**Original Anticipated Approval (PDUFA):**	N/A
		Regulatory Status:	Approved
Drug Generic Name:	onabotulinumtoxinA	**Regulatory Status Date:**	12/30/1989
		Regulatory Status Reason:	N/A
Drug Type:	Protein	**Orphan Drug Designation:**	3/22/1984
		FDA Fast Track Designation:	N/A
Route of Administration:	Intramuscular	**Breakthrough Therapy Designation**	N/A
		Priority Review Designation:	N/A

Indication Details

Indication	Prevalence Type	Prevalence
Blepharospasm	U.S.	5 / 100,000
	Global	N/A

Sales Forecast





Source: GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: August 2, 2019.

Comments Section

On December 30, 1989, FDA approved Botox® (onabotulinumtoxinA) for the treatment of blepharospasm associated with dystonia in patients 12 years of age and older.

Blepharospasm Incidence: Approximately 2,000 new cases are diagnosed each year in the United States.*
Blepharospasm Prevalence: Approximately 5 per 100,000 individuals in the general population.*

Sources:

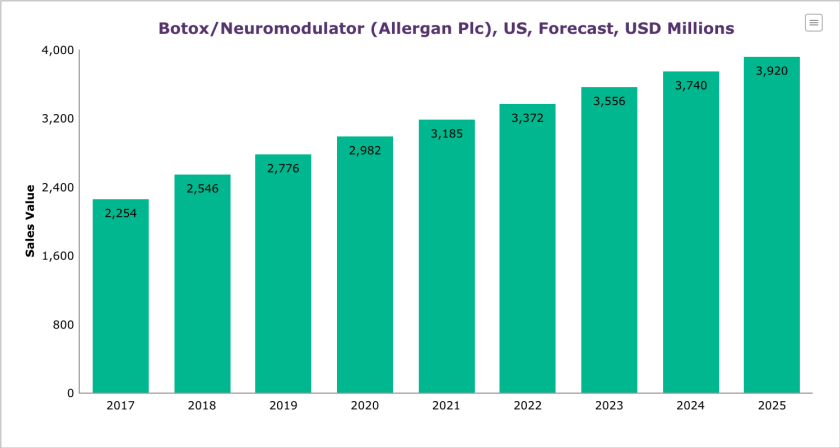
* "Benign Essential Blepharospasm." *NORD - National Organization for Rare Disorders*, rarediseases.org/rare-diseases/benign-essential-blepharospasm/. Accessed: August 1, 2019.
BOTOX® (onabotulinumtoxinA) [Package Insert]. Madison, NJ: Allergan, Inc.; 2019.
"Drugs@FDA: FDA Approved Drug Products - Botox." *U.S. Food & Drug Administration*, www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&ApplNo=103000. Accessed: July 29, 2019.
GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: July 29, 2019.

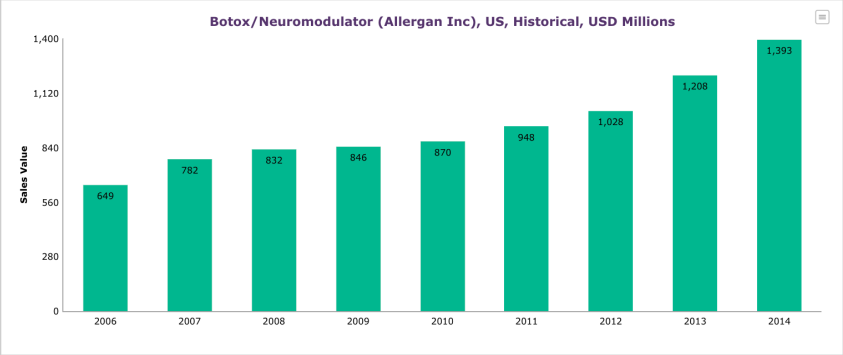
Drug Information		Regulatory Information	
Manufacturer:	Allergan	**Application Type:**	BLA
Drug Brand Name:	Botox®	**Original Anticipated Approval (PDUFA):**	N/A
		Regulatory Status:	Approved
Drug Generic Name:	onabotulinumtoxinA	**Regulatory Status Date:**	12/29/1989
		Regulatory Status Reason:	N/A
Drug Type:	Protein	**Orphan Drug Designation:**	3/22/1984
		FDA Fast Track Designation:	N/A
Route of Administration:	Intramuscular	**Breakthrough Therapy Designation**	N/A
		Priority Review Designation:	N/A

Indication Details

Indication	Prevalence Type	Prevalence
Strabismus	U.S.	677,000
	Global	N/A

Sales Forecast





Source: GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: August 2, 2019.

Comments Section

On December 29, 1989, FDA approved Botox® (onabotulinumtoxinA) for the treatment of strabismus in patients 12 years of age and older.

It is estimated that there are approximately 677,000 cases of strabismus among children 6-71 months of age in the United States.*
Prevalence rate for strabismus is estimated to be 2-5%.*
Strabismus affects about 4% of all children in the United States.**

Sources:

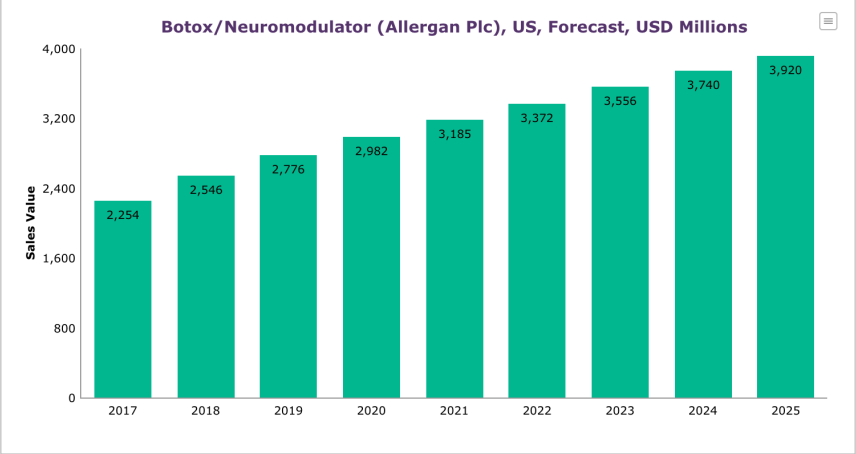
BOTOX® (onabotulinumtoxinA) [Package Insert]. Madison, NJ: Allergan, Inc.; 2019.
"Drugs@FDA: FDA Approved Drug Products - Botox." *U.S. Food & Drug Administration*, www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&ApplNo=103000. Accessed: July 29, 2019.
* Friedman DS, Repka MX, Katz J, et al. Prevalence of amblyopia and strabismus in white and African American children aged 6 through 71 months the Baltimore Pediatric Eye Disease Study. *Ophthalmology*. 2009;116(11):2128–34.e342. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2783780/. Accessed: August 1, 2019.
GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: July 29, 2019.
** "What Is Strabismus?" *American Academy of Ophthalmology*, 14 Apr. 2014, www.aao.org/eye-health/diseases/what-is-strabismus. Accessed: August 1, 2019.

Drug Information		Regulatory Information	
Manufacturer:	Allergan	**Application Type:**	Supplemental BLA
Drug Brand Name:	Botox® Cosmetic	**Original Anticipated Approval (PDUFA):**	N/A
		Regulatory Status:	Approved
Drug Generic Name:	onabotulinumtoxinA	**Regulatory Status Date:**	10/2/2017
		Regulatory Status Reason:	N/A
Drug Type:	Protein	**Orphan Drug Designation:**	N/A
		FDA Fast Track Designation:	N/A
Route of Administration:	Intramuscular	**Breakthrough Therapy Designation**	N/A
		Priority Review Designation:	N/A

Indication Details

Indication	Prevalence Type	Prevalence
Forehead Lines	U.S.	N/A
	Global	N/A

Sales Forecast



Source: GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: July 29, 2019.

Comments Section

On October 2, 2017, FDA approved Botox® Cosmetic (onabotulinumtoxinA) for the temporary improvement in the appearance of moderate to severe forehead lines associated with frontalis muscle activity.

Sources:

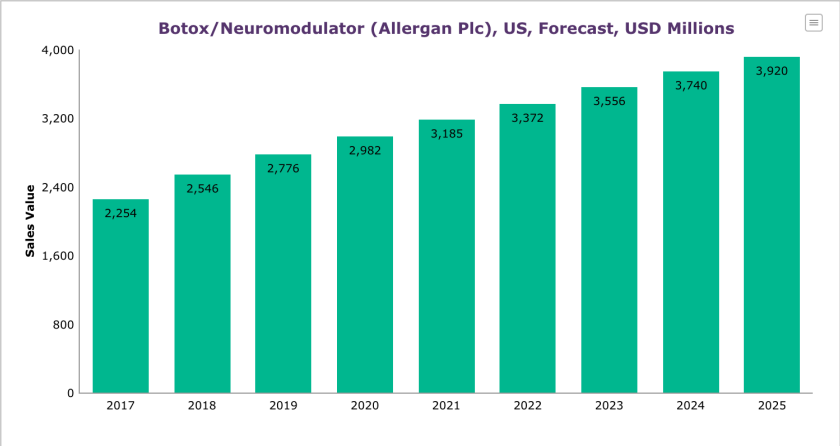
BOTOX® Cosmetic (onabotulinumtoxinA) [Package Insert]. Irvine, CA: Allergan, Inc.; 2017.
"Drugs@FDA: FDA Approved Drug Products - Botox." *U.S. Food & Drug Administration*, www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&ApplNo=103000. Accessed: July 29, 2019.
GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: July 29, 2019.

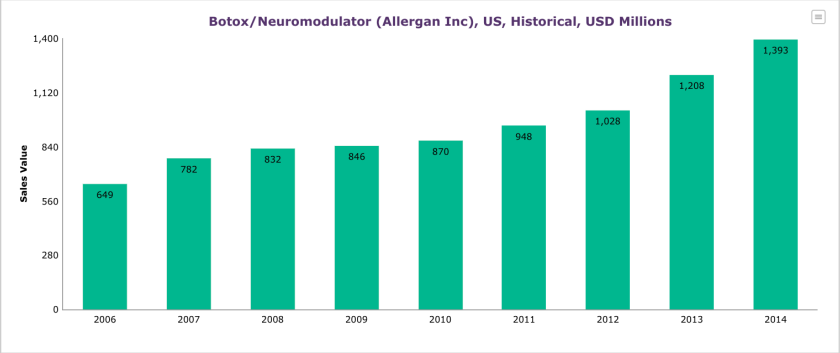
Drug Information		Regulatory Information	
Manufacturer:	Allergan	**Application Type:**	Supplemental BLA
Drug Brand Name:	Botox® Cosmetic	**Original Anticipated Approval (PDUFA):**	N/A
		Regulatory Status:	Approved
Drug Generic Name:	onabotulinumtoxinA	**Regulatory Status Date:**	9/11/2013
		Regulatory Status Reason:	N/A
Drug Type:	Protein	**Orphan Drug Designation:**	N/A
		FDA Fast Track Designation:	N/A
Route of Administration:	Intramuscular	**Breakthrough Therapy Designation**	N/A
		Priority Review Designation:	N/A

Indication Details

Indication	Prevalence Type	Prevalence
Lateral Canthal Lines	U.S.	N/A
	Global	N/A

Sales Forecast





Source: GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: August 2, 2019.

Comments Section

On September 11, 2013, FDA approved Botox® Cosmetic (onabotulinumtoxinA) for the temporary improvement in the appearance of moderate to severe lateral canthal lines associated with orbicularis oculi activity in adult patients.

Sources:

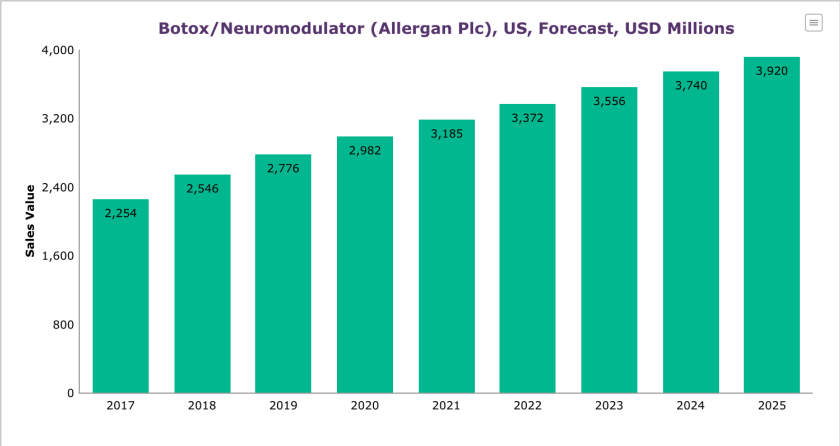
BOTOX® Cosmetic (onabotulinumtoxinA) [Package Insert]. Irvine, CA: Allergan, Inc.; 2017.
"Drugs@FDA: FDA Approved Drug Products - Botox." *U.S. Food & Drug Administration*, www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&ApplNo=103000. Accessed: July 29, 2019.
GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: July 29, 2019.

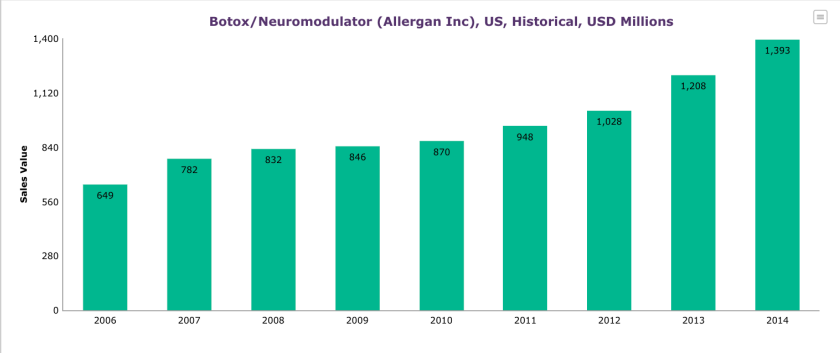
Drug Information		Regulatory Information	
Manufacturer:	Allergan	**Application Type:**	Supplemental BLA
Drug Brand Name:	Botox® Cosmetic	**Original Anticipated Approval (PDUFA):**	N/A
		Regulatory Status:	Approved
Drug Generic Name:	onabotulinumtoxinA	**Regulatory Status Date:**	4/12/2002
		Regulatory Status Reason:	N/A
Drug Type:	Protein	**Orphan Drug Designation:**	N/A
		FDA Fast Track Designation:	N/A
Route of Administration:	Intramuscular	**Breakthrough Therapy Designation**	N/A
		Priority Review Designation:	N/A

Indication Details

Indication	Prevalence Type	Prevalence
Glabellar Lines	U.S.	N/A
	Global	N/A

Sales Forecast





Source: GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: August 2, 2019.

Comments Section

On April 12, 2002, FDA approved Botox® Cosmetic (onabotulinumtoxinA) for the temporary improvement in the appearance of moderate to severe glabellar lines associated with corrugator and/or procerus muscle activity in adult patients ≤ 65 years of age.

Sources:

BOTOX® Cosmetic (onabotulinumtoxinA) [Package Insert]. Irvine, CA: Allergan, Inc.; 2017.
"Drugs@FDA: FDA Approved Drug Products - Botox." *U.S. Food & Drug Administration*, www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&ApplNo=103000. Accessed: July 29, 2019.
GlobalData, Pharma Intelligence Center. https://pharma.globaldata.com, Accessed: July 29, 2019.