Preventing Invasive Meningococcal Disease (IMD) – The Invisible Success of Public Health

sanofi

IMD is a devastating and unpredictable disease with increased risk in US adolescents

10-15% of IMD cases are fatal[1,2]

20% of survivors experience significant long-lasting sequelae[2-4]

Persistent risks due to outbreaks and increasing travel reinforce the need for routine vaccination of adolescents

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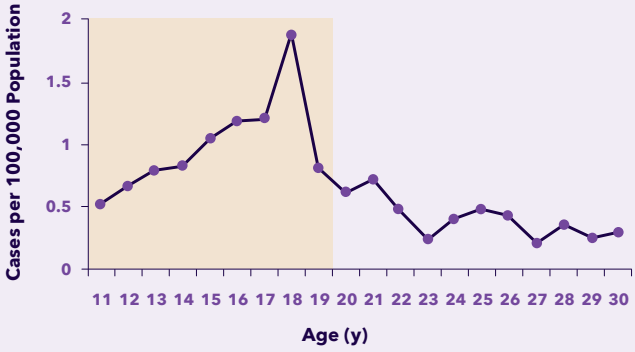
Prior to routine vaccination in the US: 1991-2002

US rates of meningococcal disease (A, C, W, Y) in 11- to 30-year-olds*[1]



~1400-2800 IMD cases occurred each year[1,5]

62% of cases occurred in persons ≥ 11 years of age[1,5,6]

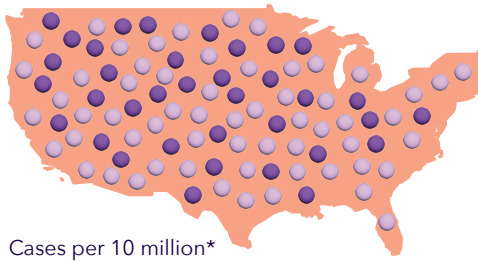
75% of IMD cases in adolescents were due to serogroups C, W, and Y[1,5]

A successful vaccination prog

Widespread use of MenACWY va

Incidence of IMD by Serogroup ACW

Pre-MenACWY vaccine (2000-2005)



Cases per 10 million*
- **16-22 years:** 60
- **11-15 years:** 36

*Markers represent national incidence, not locations of cases

From 2006 to 2017, after the introduction

IMD ↓ **48%*** / **77%†** in persons aged 16-22 years

Vaccination is essential to maintain success

CDC meningococcal vaccine recommendations for adolescents and young adults[8]

ACWY

Routine MenACWY vaccination for preteens at 11 to 12 years of age with a booster dose at age 16 years

B

CDC recommends MenB vaccination for persons 16-23 years of age on the basis of **shared clinical decision-making**

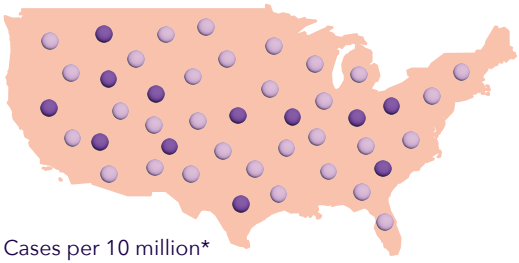
For persons with underlying conditions or circumstances that put them at increased risk of IMD, CDC also recommends routine MenACWY vaccination for those ≥ 2 months of age and routine MenB vaccination for those 10 years or older

gram contributed to decreased incidence of IMD in the US: 2000-2017

ccines contributed to decreased IMD rates[7]

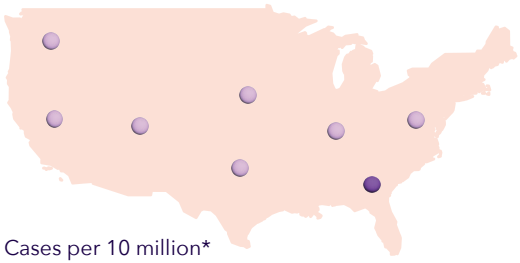
VY in US Adolescents and Young Adults (2000-2017)

Post-MenACWY primary dose (2006-2010)



Cases per 10 million*
- **16-22 years:** 31
- **11-15 years:** 12

Post-MenACWY booster dose (2011-2017)



Cases per 10 million*
- **16-22 years:** 7
- **11-15 years:** 1

n of the MenACWY vaccination program, **rates of IMD declined in adolescents**

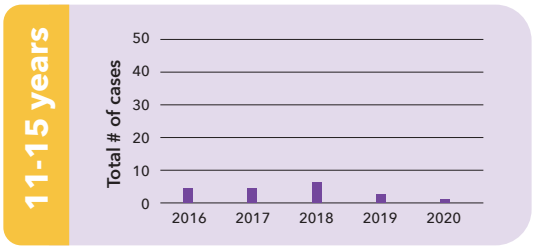
IMD **67%*** / **89%†** in adolescents aged 11-15 years

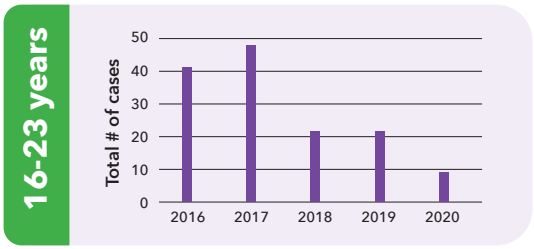
Post primary dose period (2006-2010)

Post-booster dose period (2011-2017)

Arrows represent declines in IMD caused by serogroups C, W, and Y.
*Compared with pre-vaccine period (2000-2005). †Compared with post-primary dose period.

IMD case # due to Serogroup B in adolescents/young adults in the US are **low** and **stable**[9-13]

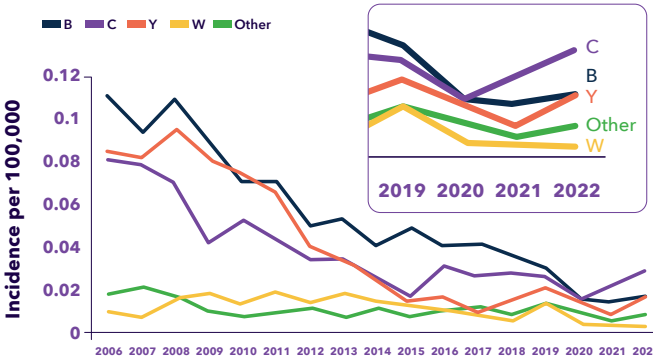




- Incidence of serogroup B IMD is relatively uncommon in young adolescents 11-14 years of age with only an average of 4 cases per year in the US[8-12]
- The continuing low number of serogroup B cases after widespread adoption of the MenACWY vaccine shows that serogroup replacement did not occur

Recent IMD outbreaks reinforce the need for routine MenACWY primary vaccination

US trends in meningococcal disease incidence by serogroup (2006-2022)†[14]



Large Serogroup C Outbreak‡

Florida (January 2022-present)

43 Serogroup C cases§

Median Age: 31

CFR: **21%**

Unusually Lethal Serogroup Y Outbreak

Throughout the US (June 2022-present)

11 Serogroup Y cases

Median Age: 39

CFR: **27%**

In addition, from 2019 through 2022, ciprofloxacin- and penicillin-resistant serogroup Y cases have been reported

Increasing global travel is an opportunity for infection

Confirmed cases of IMD in 2020 in selected EU countries[15]

	2020
France	214
Spain	213
Italy	73
Portugal	34

European Centre for Disease Prevention and Control. Surveillance Atlas of Infectious Diseases. Accessed July 12, 2023. https://atlas.ecdc.europa.eu/public/index.aspx

- The emergence of drug-resistant cases may make it harder to treat IMD, and makes it more important to vaccinate and reduce risk of disease
- Global interconnectedness due to travel means that an outbreak in an isolated location can quickly become an international threat[16]
- National recommendations for meningococcal vaccination vary in the E.U. with some countries without any routine meningococcal vaccination program[17]

*CDC, Active Bacterial Surveillance

†2021 and 2022 data are preliminary.
‡Data as of February 2023.
§Serogroup C: 35% of affected persons living with HIV; homelessness reported in 5 cases 2021-2022

CFR, case fatality rate.

References: 1. American Academy of Pediatrics Committee on Infectious Diseases. *Pediatrics.* 2005;116(2):496-505. **2.** Crowe, S. Evidence to Recommendations Framework: Pfizer's MenABCWY Vaccine. June 23, 2023. Accessed March 14, 2024. https://stacks.cdc.gov/view/cdc/130163 **3.** Bosis S, et al. *J Prev Med Hyg.* 2015;56(3):E121-E124. **4.** Nadel S, et al. *Front Pediatr.* 2018;6:321. **5.** Kaplan SL, et al. *Pediatrics.* 2006;118(4):e979-e984. **6.** Bilukha OO, et al. Prevention and Control of Meningococcal Disease. Centers for Disease Control and Prevention. May 23, 2005. Accessed March 14, 2024. https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5407a1.htm **7.** Mbaeyi S, et al. *JAMA Pediatr.* 2020 Sep 1;174(9):843-851. **8.** Mbaeyi SA, et al. *MMWR Recomm Rep.* 2020;69(9):1-4. **9.** CDC. Enhanced meningococcal disease surveillance report, 2016. Accessed March 15, 2024. https://www.cdc.gov/meningococcal/downloads/NCIRD-EMS-Report-2016.pdf **10.** CDC. Enhanced meningococcal disease surveillance report, 2017. Accessed March 15, 2024. https://stacks.cdc.gov/view/cdc/75419.pdf. **11.** CDC. Enhanced meningococcal disease surveillance report, 2018. Accessed March 14, 2024. https://www.cdc.gov/meningococcal/downloads/NCIRD-EMS-Report-2018.pdf **12.** CDC. Enhanced meningococcal disease surveillance report, 2019. Accessed March 15, 2024. https://www.cdc.gov/meningococcal/downloads/ NCIRD-EMS-Report-2019.pdf. **13.** CDC. Enhanced meningococcal disease surveillance report, 2020. Accessed March 15, 2024. https://www.cdc.gov/meningococcal/downloads/NCIRD-EMS-Report-2020.pdf **14.** CDC, National Center for Immunization & Respiratory Diseases, Epidemiology of Meningococcal Disease in the United States, Advisory Committee on Immunization Practices Meeting. Updated February 23, 2023. Accessed March 2024. https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2023-02/slides-02-23/Mening-02-Rubis-508.pdf. **15.** European Centre for Disease Prevention and Control. Surveillance Atlas of Infectious Diseases. Accessed March 14, 2024. https://atlas.ecdc.europa.eu/public/index.aspx **16.** Tuite AR, et al. *Journal of Travel Medicine.* 2020;27(4):1–8. **17.** Pinto Cardoso G, et al. *Front Pediatr.* 2022;10:1000657.