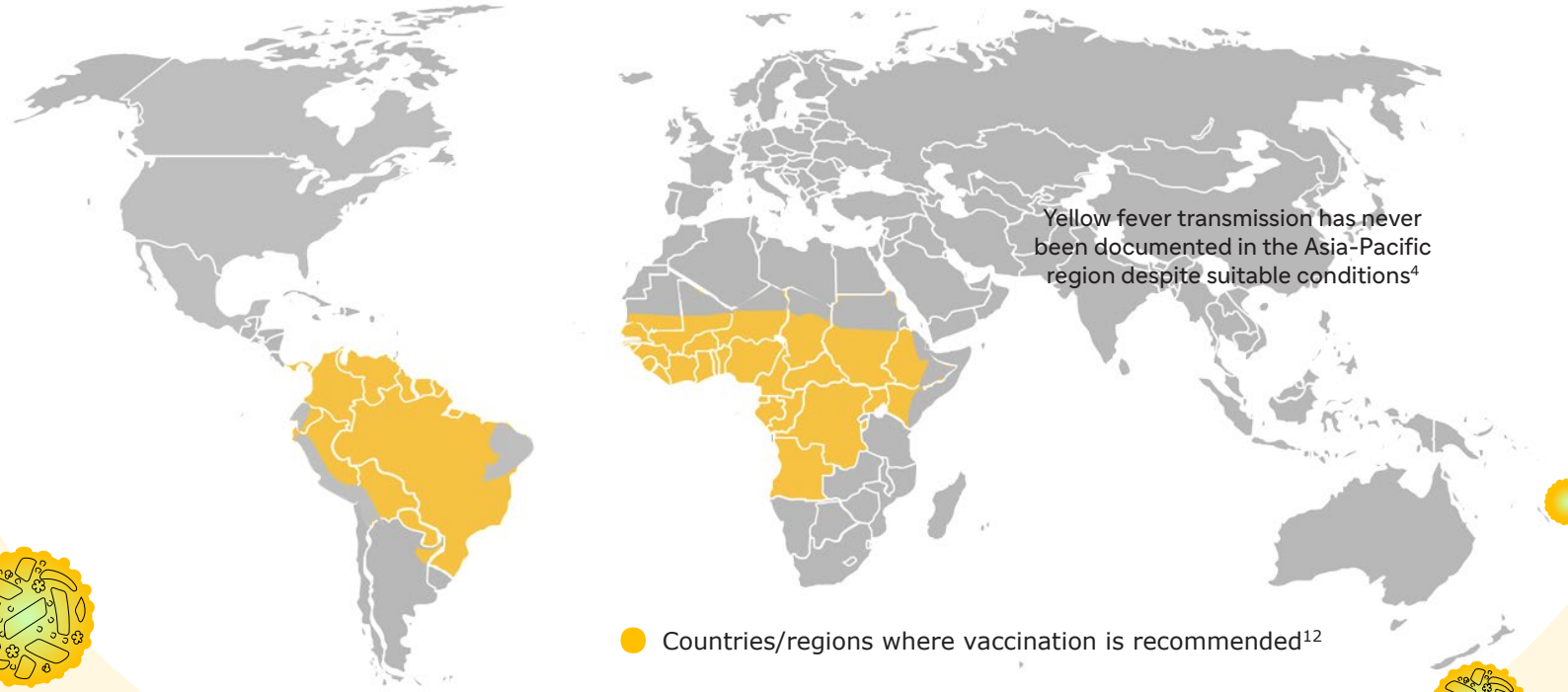
Yellow fever

Yellow fever is a mosquito-borne disease transmitted to humans by *Aedes* and *Haemagogus* mosquitoes[1]

29 countries in Africa and *13* countries in South America are at risk of Yellow Fever transmission[2] *(WHO, as of November 2022)*

109,000 severe infections and *51,000* deaths estimated in Africa and South America in 2018[3]



Countries/regions where vaccination is recommended[12]

Climate change, globalization, population growth, and urbanization may impact the spread of the virus[5]

About **half of the world's population** may be exposed to potentially disease-spreading mosquitoes by 2050[6]

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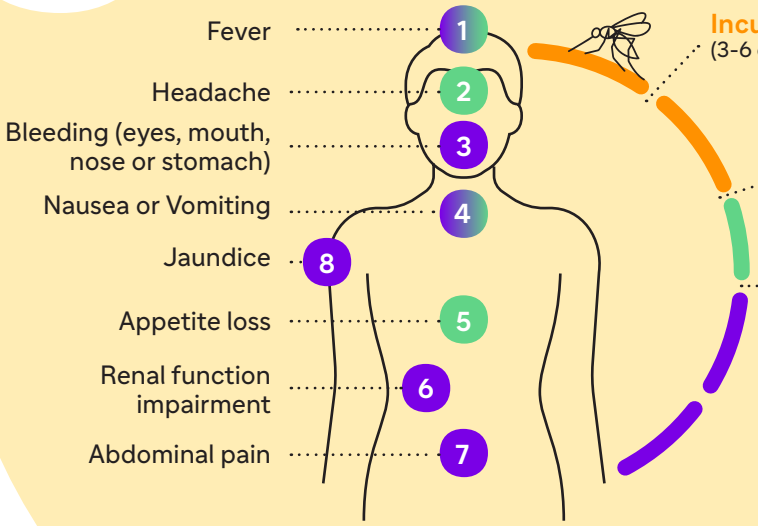
Yellow Fever Common Symptoms

Infection with the yellow fever virus can be asymptomatic or cause a wide spectrum of disease, from mild symptoms to severe illness[7]

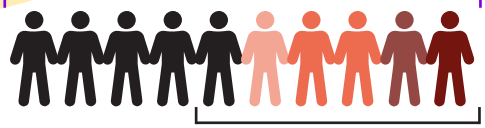


Most patients recover after Acute Phase[8]

As per WHO, **15% of patients progress to serious forms**[8]

Adapted from WHO, 2013[8]

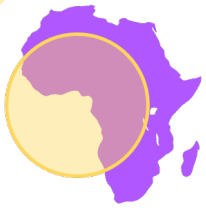
Evolution among serious forms



20-50% deaths[9]

Travel-risks

- Yellow fever is a *vaccine-preventable disease*
- *As per US CDC*[10], for a 2-week stay in an endemic area, the estimated risks† for *illness* or *death* (per 100,000 people) due to yellow fever for an unvaccinated traveler are:



West Africa:
- *50 cases/100,000*
- *10 deaths/100,000*

South America:
- *5 cases /100,000*
- *1 death/100,000*

† Estimates based on the risk to indigenous populations

- According to WHO[11], Yellow fever is the only disease listed in the International Health Regulations for which *proof of YF vaccination* is required as a condition of entry in several countries[2] including airport transfers[2]

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1. Staples JE, et al. 2018 Plotkin's Vaccines, 7th edition, Chapter 63 Yellow fever vaccines pp:1181–1265.e20. **2.** World Health Organization. Countries with risk of yellow fever transmission and countries requiring yellow fever vaccination Nov 2022 (who.int) available at: https://www.who.int/publications/m/item/countries-with-risk-of-yellow-fever-transmission-and-countries-requiring-yellow-fever-vaccination-(november-2022). Accessed April 2023. **3.** Gaythorpe K et al. The global burden of yellow fever. eLife 2021; 10:e64670c. **4.** Kuno et al. The Absence of Yellow Fever in Asia: History, Hypotheses, Vector Dispersal, Possibility of YF in Asia, and Other enigmas. Viruses 2020, 12, 1349. **5.** Gianchecchi E, et al. Yellow Fever: Origin, Epidemiology, Preventive Strategies and Future Prospects. Vaccines, 2022. 10, 372: 1-16. **6.** Kreamer M, et al. Past and future spread of the arbovirus vectors Aedes aegypti and Aedes albopictus. Nature Microbiol, 2019. 4: 854–63. **7.** Garske T, et al. Yellow Fever in Africa: Estimating the Burden of Disease and Impact of Mass Vaccination from Outbreak and Serological Data. PLoS Med, 2014; 11(5): e1001638. **8.** World Health Organization - WHO position paper on Yellow fever vaccines. Weekly epidemiological record, No. 27, 5 july 2013. **9.** Monath TP. & Vasconcelos PF. Yellow fever. J clin Virol., 2015. 64:160–173. **10.** CDC yellow book: Yellow Fever - Chapter 4 - 2020 Yellow Book | Travelers' Health | CDC. **11.** World Health Organization. Yellow fever under International Health Regulations (IHR) available at: https://www.who.int/groups/qryf - Accessed April 2023. 12. CDC yellow book 2024: Yellow Fever available at https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/yellow-fever - Accessed July 2023.

WHO: World Health Organization; US CDC: US Centers for Disease Control and Prevention
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