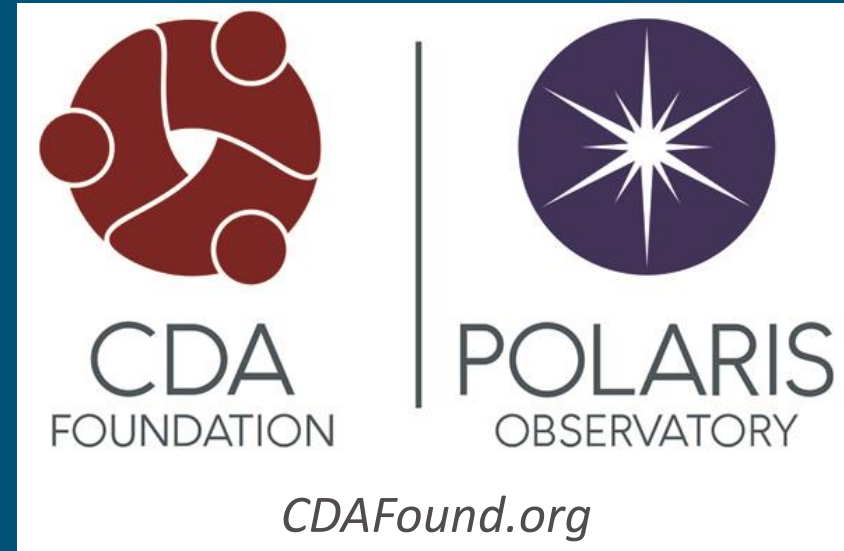


Global prevalence of hepatitis C virus in women of childbearing age in 2019: A modeling study



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Background

- Treating women of childbearing age (15-49 years) infected with hepatitis C virus (HCV) is an important step towards elimination, since disease in this population affects both vertical transmission and community spread.^{1,2} As HCV prenatal treatment is not yet approved, ideally women would be screened and treated before becoming pregnant to prevent transmission.
- Prevalence estimates in this cohort are lacking. This analysis combines a literature search, modeling work and extrapolation to estimate a 2019 global viremic HCV prevalence among women of childbearing age.

Methods

- A literature search was conducted to identify studies reporting HCV prevalence in women of childbearing age for all countries of the world. Studies meeting inclusion criteria were scored for generalizability, sample size and year of analysis.
- The highest scoring study for each country, identified from the literature search, was compared against the previously identified general population study used to model country-level disease burden. Studies were compared using a previously published data quality scoring system and the model was updated, as appropriate, when a better study was identified.
- In countries where data were available, the 2019 viremic prevalence was extracted from the model.
- In countries where data were not available, prevalence estimates were extrapolated from countries with data, using regional average calculations based on Global Burden of Disease region. One hundred and ten country models, developed by the Center for Disease Analysis previously, were used in this analysis.

Results

- The literature search identified 2,108 studies, of which 42 met inclusion criteria for comparison with the previously identified general population study. None of the 42 studies were determined to be of higher quality than current model inputs; no models were updated.
- Empirical data and modeling were available for 90% of the global population of women aged 15-49 years in 2019.
- An estimated 14.9 (95% Uncertainty Interval: 9.67-18.28) million women aged 15-49 years were infected with chronic HCV worldwide, corresponding to a viremic prevalence of 0.78% (0.62-0.86) in 2019.
- Prevalence increased with age from 0.25% (UI: 0.20 - 0.27) in women aged 15-19 years to 1.21% (0.97 - 1.34) in women aged 45-49 years.
- The greatest number of viremic infections were found in China (16% of all global infections) and Pakistan (15%), with the highest prevalence in Mongolia (5.14% [UI: 3.46 - 6.28]) and Burundi (4.91% [3.80–18.75]).

Figure 2. Number of viremic HCV infections among women aged 15-49 years, 2019

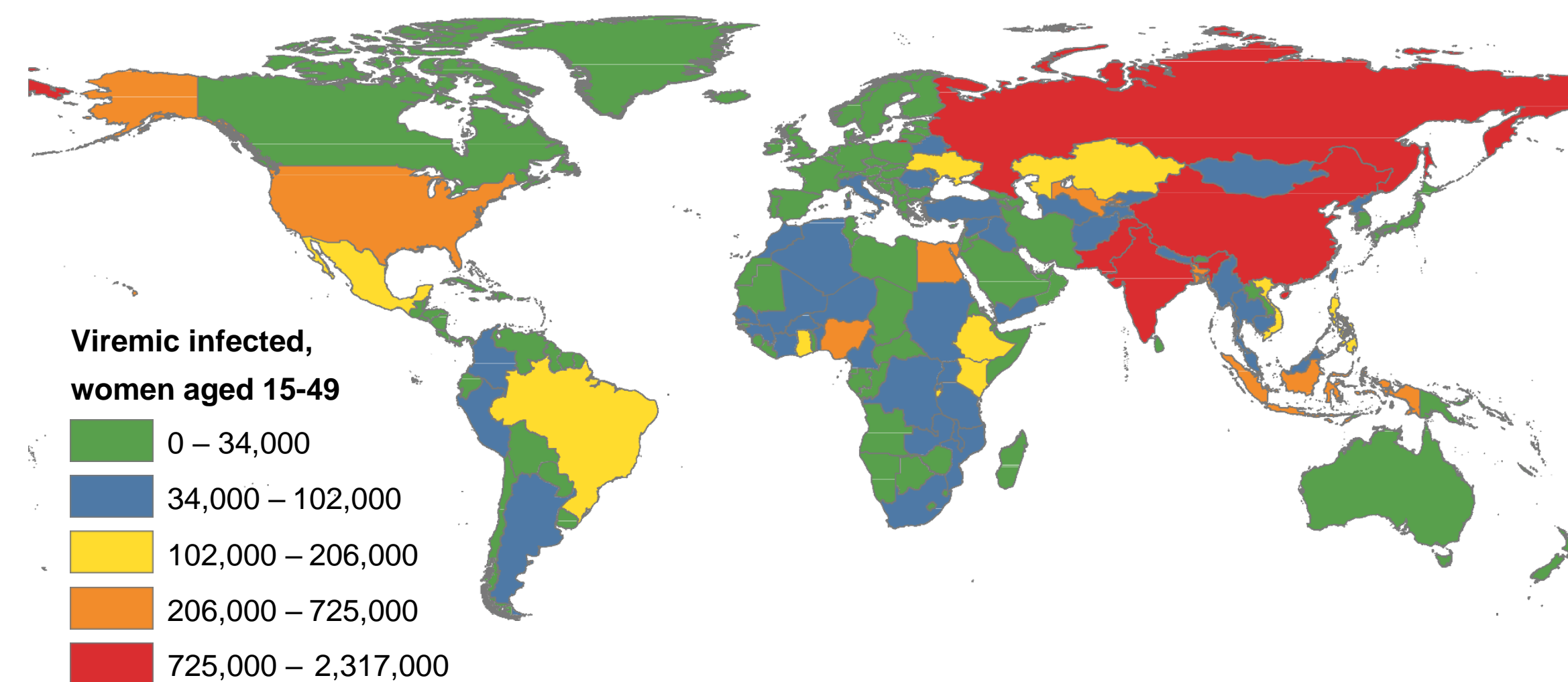


Figure 1. HCV viremic prevalence among women aged 15-49 years, 2019

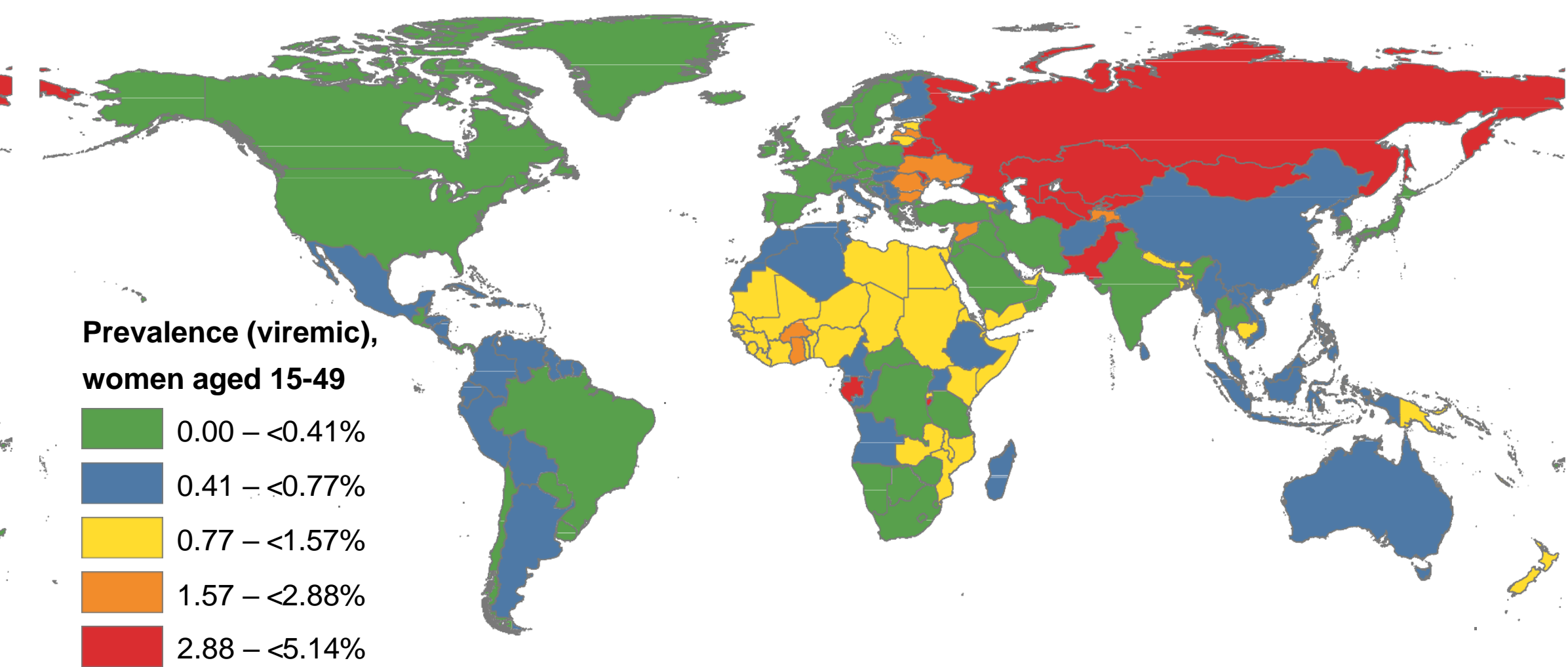
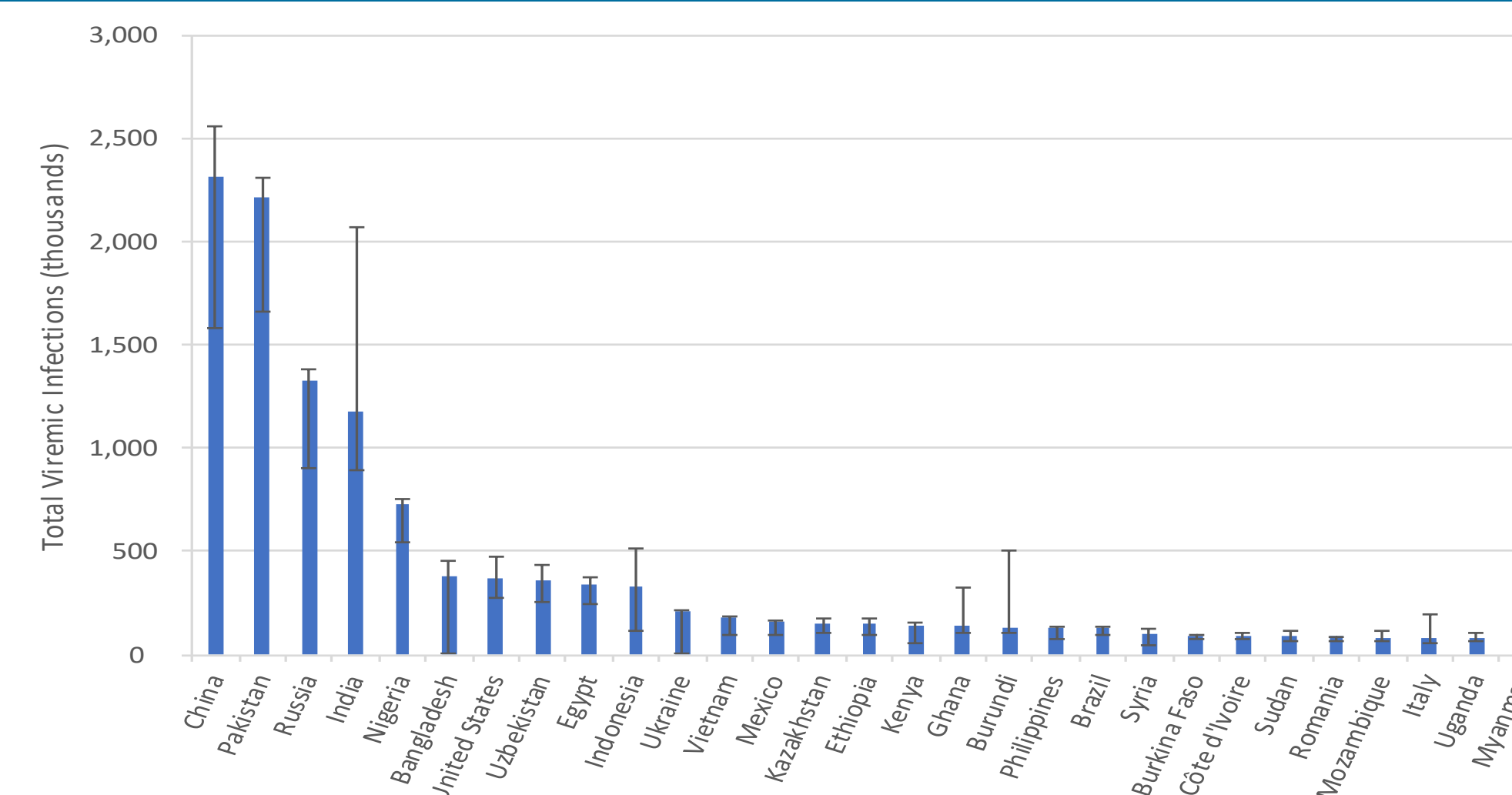


Figure 3. Countries accounting for 80% of global viremic HCV infections, women aged 15-49 years, 2019



Conclusions

Most publications on HCV disease burden among women aged 15-49 years focuses on the subset of pregnant women. Utilizing modeling, this analysis provides global and national HCV prevalence estimates for the entire cohort. These data support preconception test-and-treat strategies to reduce vertical transmission and total disease burden.

References

1. The American Association for the Study of Liver Diseases and Infectious Diseases Society of America. HCV Guidance: Recommendations for Testing, Managing, and Treating Hepatitis C. (updated November 6, 2019). Available from: www.hcvguidelines.org [Accessed 3/10/2020].
2. Schillie SF, Canary L, Koneru A, et al. Hepatitis C Virus in Women of Childbearing Age, Pregnant Women, and Children. *American Journal of Preventive Medicine* 2018; 55(5): 633-41.

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