

Calculating the Burden of Sexually Transmitted Infections in the United States: New CDC Research Streamlines Data Analysis

STD Prevention
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STORIES**

Information is one of the most effective weapons against the spread of disease and its burden on society. Since 2014, rates of reported sexually transmitted infections (STIs) have continued to climb in the United States, and access to reliable data to use in appropriate ways for policy and decision making has become more important than ever in countering this steady increase.

Some viral STDs like herpes, human papillomavirus (HPV), hepatitis, or HIV may be of long or even lifelong duration, while others may have much shorter durations of infection because they are curable with treatment. For this reason, investigators look at both the **prevalence** of infection, which is the number of infections - new or existing - at any given point in time, and **incidence**, which is the number of new infections during a particular time period. Altogether, these factors, combined with the considerable direct medical costs these infections incur, tell a complex story of how STIs affect public health in the U.S.



Looking at Numbers to Narrow Information Gaps

In 2013, two seminal papers from CDC authors published in the journal *Sexually Transmitted Diseases (STD)* delivered a comprehensive look at estimated STI prevalence, incidence, and costs in the United States in 2008. Since that time, those papers have become a commonly used source of reference for public health experts and researchers. "STIs in the United States are common and costly. The estimates in the 2008 research highlight the vast scope of these common infections. Information which helps guide decisions around quality STI prevention, a cornerstone of protecting America's health, wealth, and wellness, is a critical resource," said Dr. Raul Romaguera, Deputy Director of CDC's [Division of STD Prevention](#) (DSTDP).

To date, both papers continue to rank in the top five percent of the most cited articles in *STD* since 2000 by [Altmetric](#), signaling how essential they are to the field of STI research. "STD researchers across the United States rely heavily on these articles as the most reliable estimates of the STI burden in the U.S.," said *STD* Editor-in-Chief, Dr. William C. Miller.

26.2
million incident
STIs in the U.S.
in 2018

67.6
million prevalent
STIs in the U.S.
in 2018

45% of all
2018 incident
STIs were acquired
by persons 15-24
years old



**Centers for Disease
Control and Prevention**
National Center for HIV/AIDS,
Viral Hepatitis, STD, and
TB Prevention

CDC scientists have now returned with a sequel, and like any sequel of worth, this one aims to be bigger and better. Updated papers estimating the prevalence, incidence, and direct medical costs of common STIs now include a more rigorous and comprehensive methodology which relies on more measurable parameters, and includes a more transparent process for other researchers to potentially reproduce. The new model also factors uncertainty into the calculations, which in this context represents the interval within which the true estimates of prevalence, incidence, and costs are most likely to fall. It is the authors' hope that by using this more rigorous and transparent methodology, they are allowing investigators to more easily reproduce their process in the future, allowing for simplified future studies, and hopefully providing more precise estimates.

From these analyses, the authors created a special issue with 17 papers in *STD*—devoting more space for a full description of the methods, nuances, and limitations affecting their calculations. “In the past, these estimates have been captured in a single paper, but this year we are fortunate to have an entire issue devoted to this effort. With individual articles focused on specific topics, the *STD* research community will be getting much more depth and greater insights into the burden of STIs in the U.S. At the journal *STD*, we are excited to publish these important papers,” said Miller.

More data, better data still needed

The updated estimates in the *STD* special issue deliver much-needed information about the current state of STI prevalence, incidence, and costs in the U.S., but since a main goal is that it serve as a catalyst for future research, it is hoped that a more complete picture is on the horizon. Some of the critical data that could help fill information gaps include **1**) new estimates based on modeling approaches that are more rigorous, robust, and comprehensive (e.g., uncertainty limits, updated methodology, and more comprehensive documentation of methods); **2**) more complete data for model parameters (e.g., natural clearance rates and asymptomatic percentages); and **3**) population-based STI screening estimates.

Overall, better data means more precise burden and cost estimates, which in turn would strengthen prevention and allocation efforts.

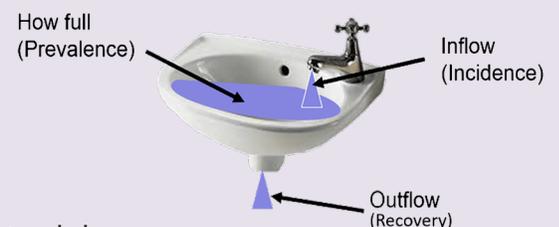
No small debt

And what of the contributing factor of medical costs? STIs have a significant financial impact on the U.S. healthcare system – costing billions each year. New infections in 2018 totaled **\$16 billion** in direct medical costs alone. And it is important to note that only direct medical costs are factored into the analyses of both the 2008 and current research papers. Intangibles such as loss of productivity, psychological effects, and sick days are an acknowledged burden that continue to impact and drive up the tangible, direct medical costs of STIs. In fact, said Dr. Harrell Chesson, the lead of the cost estimates work in this project, “It is not unreasonable to expect that the nonmedical costs of STIs could far exceed direct medical costs.” For example, he noted that productivity costs associated with HPV cancer deaths has been estimated to exceed \$5 billion annually (in 2018 dollars). He and his co-authors hope in the future to quantify those (to date) unmeasured costs.

What the earlier papers and the new special issue strongly confirm is that STIs have a substantial impact on the overall well-being of the public's health in the U.S. By strengthening the methodologic design compared to the 2008 estimates, this special issue is poised to become the most up-to-date reference for STI prevalence, incidence, and costs in this country.

STIs in the US: Incidence, Prevalence, and Recovery Are Systematically Linked

At any given period of time, ongoing STIs, new STIs, and successfully treated or naturally cleared infections all contribute to the overall burden of STIs.



- Natural clearance
- Screening
- Symptomatic treatment seeking

Image source:

<https://sphweb.bumc.bu.edu/otlt/MPH-Modules/PH717-QuantCore/PH717-Module3-Frequency-Association/PH717-Module3-Frequency-Association5.html>

• Learn MORE at [cdc.gov/std](https://www.cdc.gov/std)

- [Prevalence, Incidence, and Costs of Sexually Transmitted Infections in the U.S.](#)
- [Impact of Sexually Transmitted Infections on 15 to 24-year-olds](#)
- [Sexually Transmitted Disease Surveillance 2018](#)