# GONORRHOEA: THE STATE OF SURVEILLANCE GLOBALLY AND OBSERVED BURDEN OF INFECTION

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## BACKGROUND

*Neisseria gonorrhoeae*

**87 million** **Global cases of gonorrhoea in 2016**
Underdiagnosed and underreported
Incidence is increasing
High levels of antibiotic resistance

Anyone who has sex is at risk, but some groups are more affected

- Young people aged 15–24
- **Men-who-have-sex-with-men (MSM)**
- **Sex workers**

LEFT UNTREATED, GONORRHOEA CAN CAUSE:


Image: credit of James Archer/CDC; infographics: adapted from CDC; global cases reported by WHO

### Aim of this review:

- To evaluate the prevalence of urogenital and rectal gonorrhoea infections in the general population and in men-who-have-sex-with-men (MSM) and sex workers.
- Describe the state of gonorrhoea surveillance at national level globally.

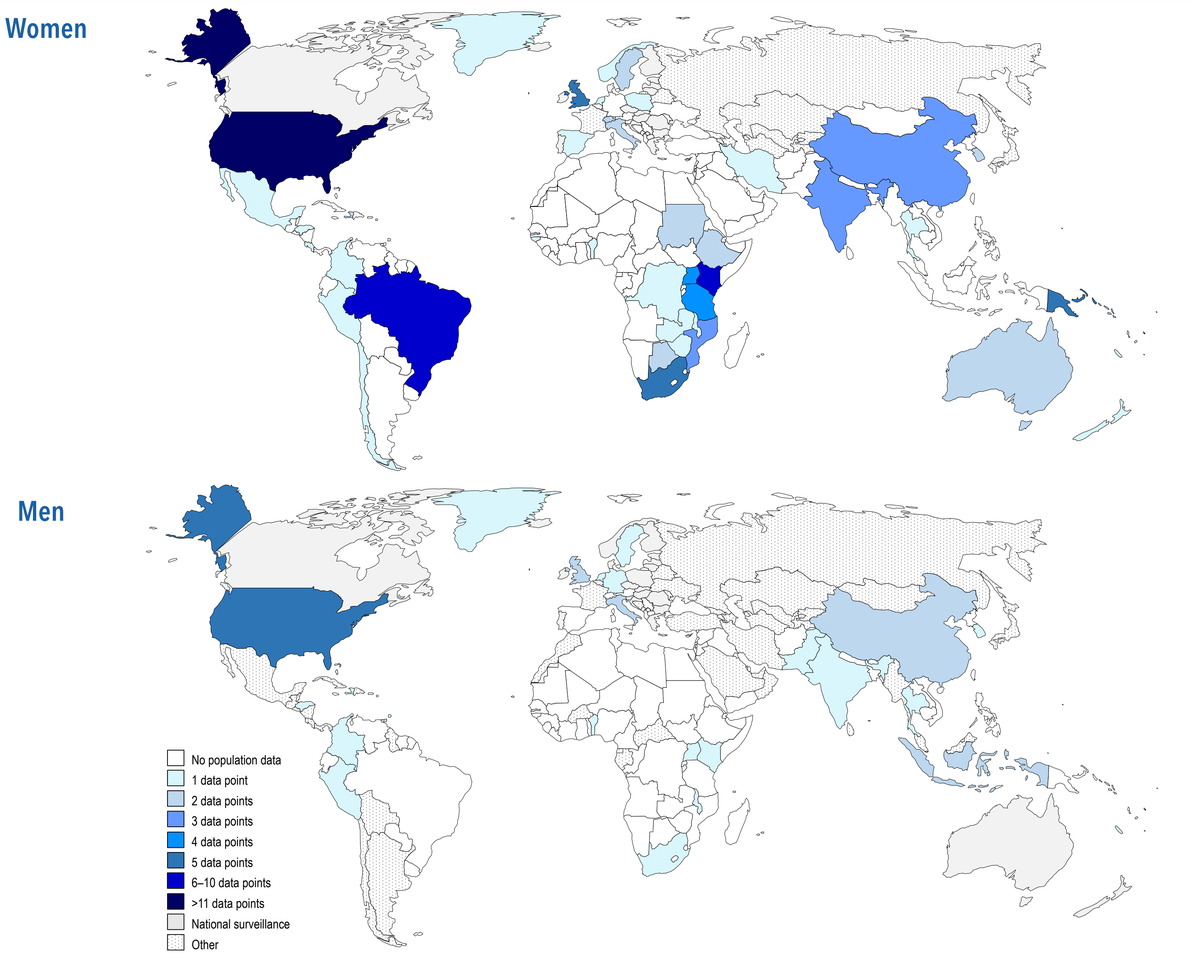
## METHODS

- We conducted a systematic literature search to estimate the prevalence of gonorrhoea, with the proportion of positive tests per number tested at the study level as primary outcome of interest.
- Papers published from 22 August 2008 to 11 April 2019 were searched according to pre-specified inclusion criteria. English language abstracts were included and full texts reviewed in English, Spanish, Portuguese, German and French.
- Estimates were adjusted for laboratory test performance and geographic location.
- We also conducted a grey literature online search (in English) of websites, data repositories and surveillance reports, and public health or governmental agencies to provide contextual information about the surveillance systems in each country or region.

## RESULTS

- Data are reported from 235/2042 empirical studies reviewed and 12 data repositories, including routine (inter)national and surveillance reports.

### Number of population-based prevalence points identified at country level (both men and women) according to systematic search criteria. Prevalence was highest in Oceania and countries in Southern and sub-Saharan Africa (data not shown).



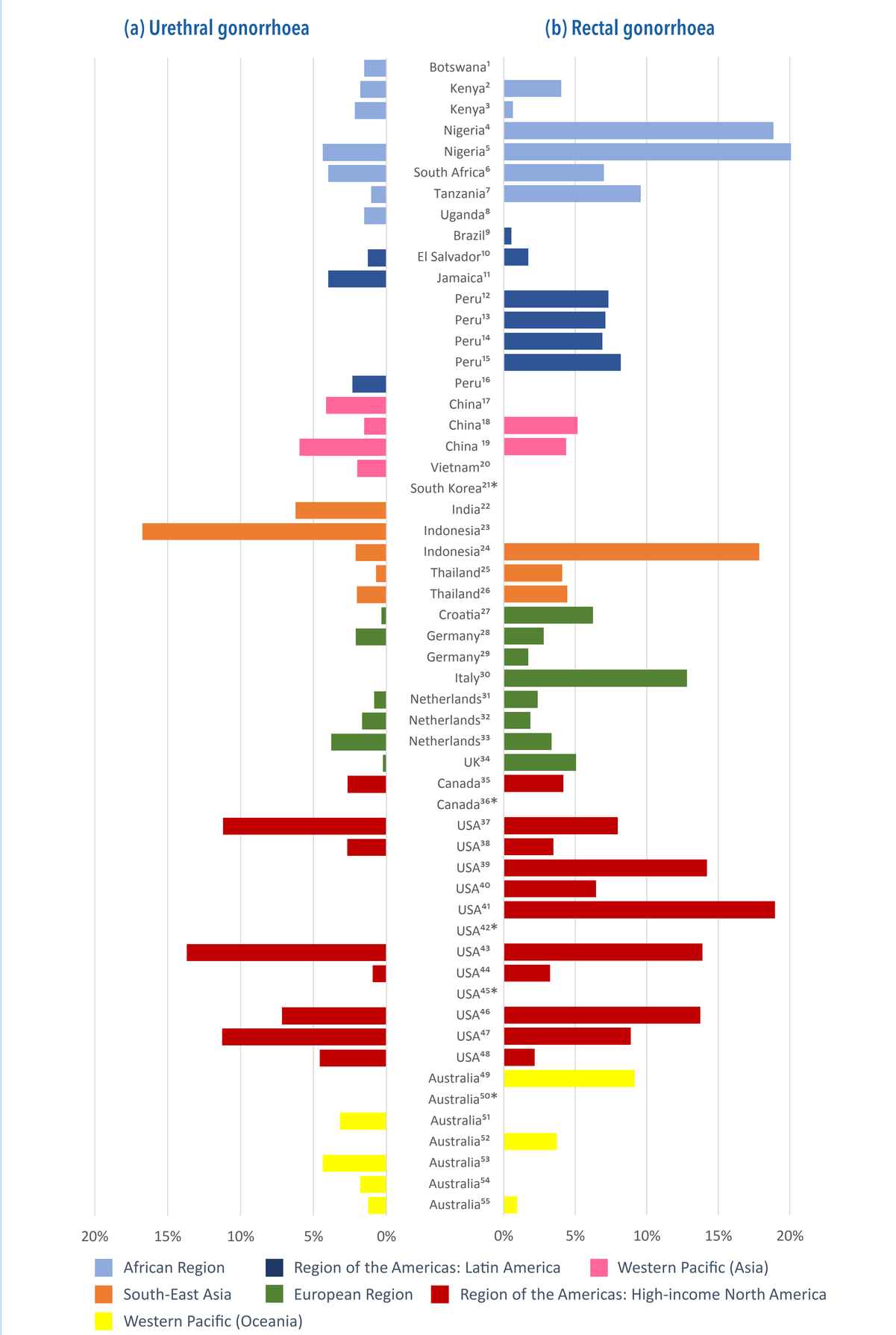

The national surveillance category includes countries that generate national notification rates based on best practice diagnostics, but for which we did not identify a prevalence point. The 'Other' category includes countries that conduct sentinel surveillance only, or for which some data was identified, but a prevalence estimate was not discoverable during our search. Maps represent identified prevalence data points but not actual prevalence data.

### Sex workers:prevalence estimates for urogenital infection across all countries were approximately 10x higher than in the general population

| WHO region | Country | No. of studies | Years included (range) | N tested per study (or range) | Total sample size | Standardized prevalence (or range) | Country prevalence if >1 study (weighted mean) |
|---|---|---|---|---|---|---|---|
| **Female Sex Workers** | | | | | | | |
| **African Region** | Benin[56] | 1 | 1993–2008 | 1082 | 1082 | 5.5% | 5.5% |
| | Botswana[57] | 1 | 2012 | 947 | 947 | 10.9% | 10.9% |
| | Cote d'Ivoire[58] | 1 | 2007 & 2009 | 1110 | 1110 | 4.4% | 4.4% |
| | Ethiopia[59] | 1 | 2017 | 338 | 338 | 4.1% | 4.1% |
| | Guinea[60] | 1 | 2005–2006 | 223 | 223 | 8.4% | 8.4% |
| | Kenya[61] | 1 | 2009–2010 | 2933 | 2933 | 3.8% | 3.8% |
| | Rwanda[62] | 1 | 2006–2007 | 397 | 397 | 11.1% | 11.1% |
| | Uganda[63] | 1 | 2008–2009 | 1025 | 1025 | 12.5% | 12.5% |
| | Benin[64] | 1 | 2005 | 882 | 882 | 2.9% | 2.9% |
| | Several sub-Saharan countries[65] | 1 | 2010–2011 | 30 | 30 | 6.3% | 6.3% |
| **Americas (ex. North America)** | Guatemala[66] | 1 | 2008–2009 | 494 | 494 | 0.8% | 0.8% |
| | Honduras[67] | 1 | 2006–2008 | 1217 | 1217 | 1.5% | 1.5% |
| | Mexico[68] | 1 | 2010–2013 | 212 | 212 | 1.0% | 1.0% |
| | Mexico/US[69] | 1 | 2004–2006 | 924 | 924 | 5.7% | 5.7% |
| **Western Pacific Asia** | Cambodia[70] | 2 | 2005–2008 | 160–1061 | 1221 | 8.1–12.5% | 11.9% |
| | China[71] | 10 | 2003–2013 | 96–3099 | 11478 | 0.9–36.5% | 5.1% |
| | Vietnam[72] | 1 | 2003 | 395 | 395 | 14.4% | 14.4% |
| **Eastern Mediterranean** | Iran[73] | 2 | 2010–2014 | 99–278 | 377 | 1.8–11.6% | 4.4% |
| | Pakistan[74] | 2 | 2007 | 533–730 | 1263 | 1.3–6.9% | 4.5% |
| | Tunisia[75] | 1 | 2007 | 188 | 188 | 4.7% | 4.7% |
| **Europe** | Spain[76] | 1 | 2005 | 353 | 353 | 0.6% | 0.6% |
| | UK[77] | 1 | 2011 | 2534 | 2534 | 1.9% | 1.9% |
| **South East Asia** | Bangladesh[78] | 2 | 2006–2014 | 700–1013 | 1713 | 2.3–4.7% | 3.3% |
| | India[79] | 5 | 2004–2008 | 300–3223 | 4576 | 0.0–2.1% | 3.8% |
| | Indonesia[80] | 4 | 2005–2009 | 217–4324 | 7566 | 10.0–26.1% | 26.1% |
| **Male sex workers** | | | | | | | |
| **Africa** | Cote d'Ivoire[58] | 1 | 2007–2008 | 96 | 96 | 12.5% | 12.5% |
| **Americas (ex. North America)** | Mexico[68] | 2 | 2010–2013 | 212–267 | 479 | 1.5–2.5% | 2.1% |
| **Asia** | South Korea[81] | 1 | 2008 | 118 | 118 | 0.0% | 0.0% |
| | Vietnam[82] | 1 | 2014–2016 | N/R | N/R | N/R | 6.07% |
| **Eastern Mediterranean** | Pakistan[74] | 1 | 2007 | 915 | 915 | 0.0% | 0.0% |
| **Europe** | UK[77] | 1 | 2011 | 447 | 447 | 17.1% | 17.1% |

**N/R**, not reported

### MSM: more than 70% of reported prevalence of urethral (a) and/or rectal (b) infections ranged from 1%-10%, with highest rates reported for rectal infections. Results are shown by WHO region, country and study.




*These studies reported 0 cases of urethral and/or rectal infections

## CONCLUSIONS

- Prevalence studies highlight the magnitude of the infection burden, particularly in MSM and sex workers globally, but there is a lack of standardized gonorrhoea monitoring; reporting and surveillance is weak or absent in many countries.
- To better inform sexually transmitted infection control programmes (particularly in risk populations), serial prevalence monitoring at intervals should be considered, including assessment and reporting of a minimum set of epidemiological variables on the infection.
- This will help to optimize evaluations of the burden of disease and maximize the utility of the data collected at local, national and regional level and internationally.

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