





**Prevention and control of chlamydia in Europe – from data to policies and testing recommendations**

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No conflicts of interest.

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**Overview**

Chlamydia epidemiology in EU/EEA  
Evidence-base for chlamydia testing  
ECDC chlamydia guidance  
Remaining challenges for chlamydia control  
Take home messages



Prevention and control of chlamydia in Europe – from data to policies and testing recommendations





**What is the European Centre for Diseases Prevention and Control (ECDC)?**

A **European Union** independent agency active since 2005, based in Sweden.

31 Member States countries  
**EU/EEA > 500 million population**

Our mission is to strengthen EU/EEA defences against infectious diseases, through:

- surveillance,
- scientific advice,
- technical assistance

**ECDC Programme for HIV/AIDS, STIs and viral hepatitis**

**Related diseases**


- Congenital syphilis
- Gonorrhoea
- Hepatitis B
- Hepatitis C
- HIV infection and AIDS
- Lymphogranuloma venereum
- Sexually Transmitted Infections (STI)
- Syphilis

**Disease programmes and networks**

- HIV/AIDS, sexual transmitted infections and viral hepatitis Programme
- European Network for STI Surveillance
- Surveillance Atlas of Infectious Diseases

**Peer-reviewed publications**


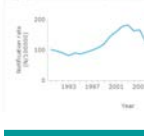
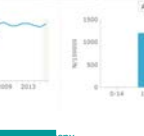
- Changes in chlamydia control activities in Europe between 2007 and 2010: a cross-national survey
- Genital chlamydia prevalence in Europe and Non-European high income countries: Systematic review and meta-analysis
- Chlamydia control activities in Europe: Cross-sectional survey
- Lymphogranuloma Venereum in Europe, 2007-2008
- Control measures used during lymphogranuloma venereum outbreak, Europe 2008



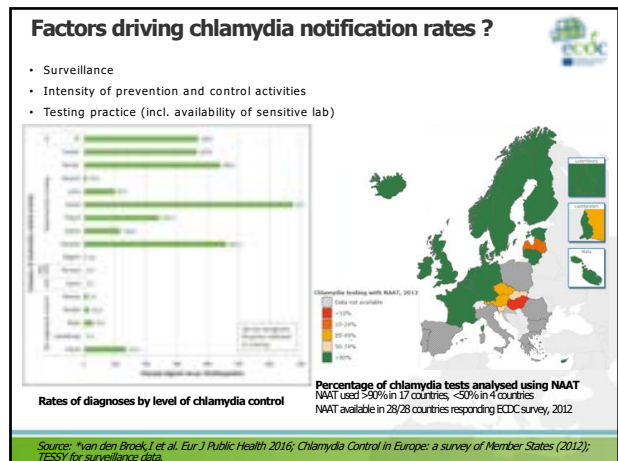
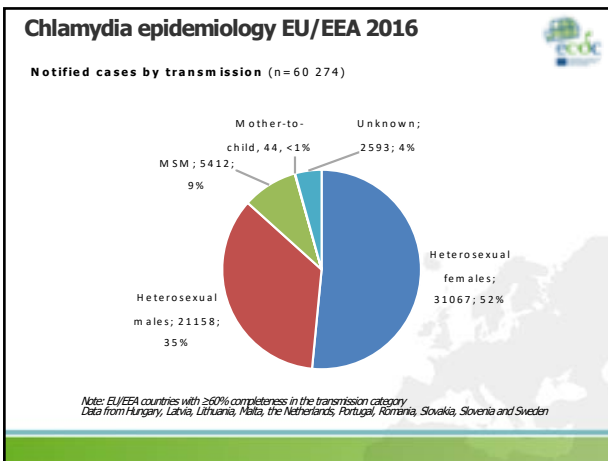
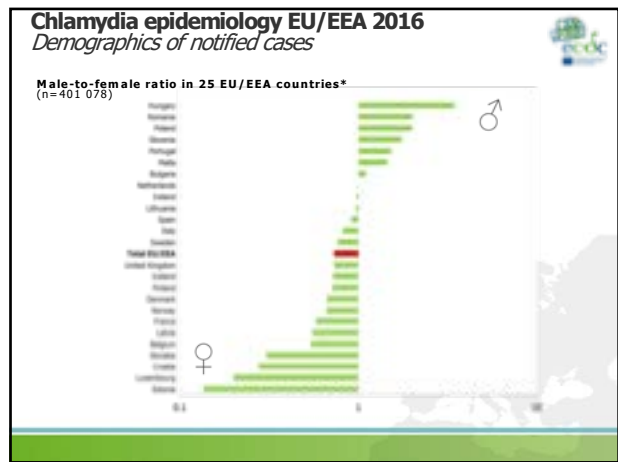
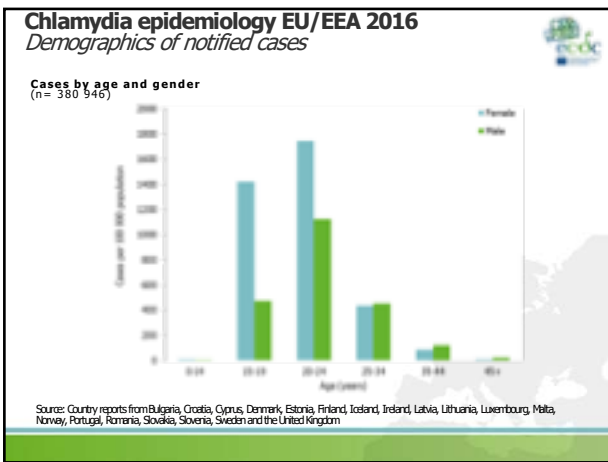
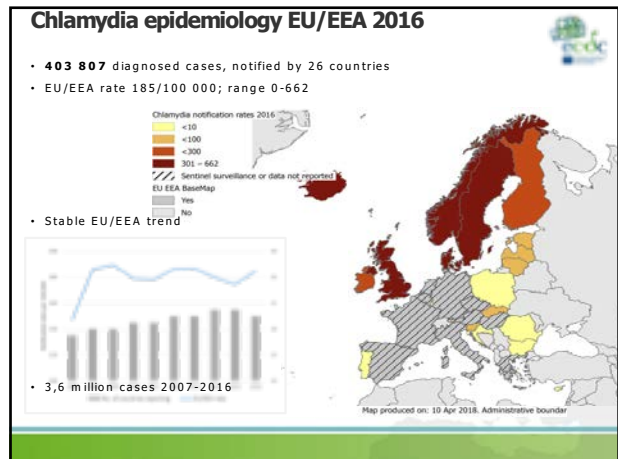
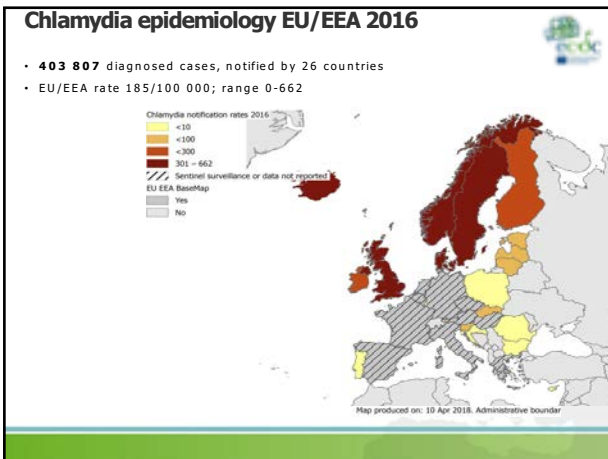
**Surveillance Atlas of Infectious Diseases**

Chlamydia infection | Confirmed cases | Notification rate

Region	Notification rate (N/100000)
EU/EEA	184.45
Austria	0.00
Belgium	5.75
Bulgaria	2.75
Croatia	1.18
Cyprus	0.00
Denmark	502.84
Estonia	62.42
Finland	260.04
France	306.71

ECDC surveillance reports



## How much chlamydia is really out there?

Population-based prevalence studies

## Chlamydia prevalence EU/EEA

Literature review (up to 2012)

Prevalence studies in EU/EEA countries

Source: ECDC. Chlamydia control in Europe - literature review; 2014

## Chlamydia prevalence EU/EEA

Literature review (up to 2012)      Meta-analysis

nationally representative estimates, sexually experienced

Women, ≤26 years			
National population, sexually experienced			
France	Goulet 2010		3.80 (1.90, 6.80)
Germany	Haar/KOGS 2012		4.44 (2.86, 6.53)
Slovenia	Klavs 2004		4.70 (2.50, 8.50)
United Kingdom	Fenton 2001		3.00 (1.70, 5.00)
Croatia	Bozicevic 2011		5.30 (2.30, 10.20)
USA	Miller 2004		4.70 (3.90, 5.70)
Subtotal (I-squared = 0.0%, p = 0.580)			4.32 (3.65, 4.98)

Men, ≤26 years			
National population, sexually experienced			
France	Goulet 2010		2.40 (1.00, 5.70)
Slovenia	Klavs 2004		4.70 (2.50, 8.50)
United Kingdom	Fenton 2001		2.70 (1.20, 5.80)
Croatia	Bozicevic 2011		7.30 (3.40, 13.40)
USA	Miller 2004		3.70 (3.00, 4.70)
Subtotal (I-squared = 5.2%, p = 0.372)			3.69 (2.77, 4.42)

Prevalence studies in EU/EEA countries

Source: ECDC. Chlamydia control in Europe - literature review; 2014

## Chlamydia prevalence ≤26 years women, EU studies (up to 2012)

Average, EU studies, 3.6% (95% CI 2.4, 4.8%)

>1 million infections

PID - infertility

Source: Redmond S et al. PlosOne; 2014

## ECDC Chlamydia control in Europe guidance

From 2009 to 2015, same aim: to support Member States to implement evidence-based control strategies

**Methods**

- Literature Review
- Survey (2012)
- Evaluation of 2009 guidance
- Expert meeting (2014)
- Consensus on conclusions

## Evidence review (2012)

Question: should chlamydia screening vs. usual care be used in sexually active adults <30 years?

### Effect of chlamydia screening on PID incidence at 12 months

Study, country	Year	Relative risk (95% CI)	Quality of evidence GRADE
Scotland, UK	1999	0.46 (0.17, 1.08)	Moderate
Chlamydia Screening, Denmark	2009	0.48 (0.25, 0.93)	
Chlamydia, UK	2010	0.48 (0.28, 0.82)	
Anderson, Denmark	2011	0.59 (0.33, 1.02)	Low
Overall (I-squared = 11.7%, p = 0.305)		0.49 (0.37, 0.64)	

1 PID prevented per 1000 screened

### Effect of chlamydia screening on prevalence

Study, country	Year	Relative risk (95% CI)	Quality of evidence GRADE
Scotland, UK	1999	0.70 (0.38, 1.28)	Low
UK and Irish, Netherlands	2010	0.58 (0.38, 0.88)	
Overall (I-squared = 70.0%, p < 0.001)		0.64 (0.48, 0.86)	

Source: ECDC. Chlamydia control in Europe - literature review; 2014; Redmond S et al. PlosOne; 2014

### ECDC Chlamydia Guidance 2015

#### Conclusions

**Recommendations for minimum level of prevention and control**

- A national strategy or plan for STI control
- Primary prevention activities\*
- Evidence-based case management guidelines that address criteria for testing, diagnostic method, treatment, partner notification and reporting of cases
- Surveillance of diagnosed chlamydia cases
- Monitoring and evaluation

**Widespread testing (<25 y/o) recommended if resources allow and M&E in place**

\*No systematic review of clinical or cost-effectiveness. Expert opinion: broad benefit to sexual health, limited risk of harm

### Evidence review update!

### Screening for genital chlamydia infection

Low N et al. 2016  
Systematic review (search up to Feb. 2016)

**Objectives**  
To assess the effects and safety of **chlamydia screening** vs **standard care** on chlamydia transmission and infection complications in pregnant and non-pregnant women and in men.

**Key results**

- 359,078 adult women and men
- no change in prevalence after three yearly invitations in general population
- reduction in prevalence after four years in sex workers
- <32% lower risk of PID in women invited to a single chlamydia screening test vs. women not invited
- no effect on epididymitis in men
- no trials in pregnant women
- no trials measuring harms of chlamydia screening

### Chlamydia screening among MSM?

Sexually Transmitted Diseases

#### Is screening for chlamydia and gonorrhoea in men who have sex with men associated with reduction of the prevalence of these infections? A systematic review of observational studies

Tsoumanis, Achilleas, Hens, Niel, MMath, MSc, Biostatistics, PhD, Kenyon, Chris, Richard, MChB, MPH, BA, MA, FCP(SA), DTMH, CertID(SA), PhD

Sexually Transmitted Diseases: February 26, 2016 - Volume Publish Ahead of Print - Issue - p

**CONCLUSION:**  
Our study was not able to provide evidence that screening for chlamydia and gonorrhoea lowers the prevalence of these infections in MSM. Randomized controlled trials are required to assess the risks and benefits of gonorrhoea/chlamydia screening in high and low risk MSM.

### IUSTI

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### 2015 European guideline on the management of Chlamydia trachomatis infections

Lai JWW et al. 2015

**Indications for laboratory testing**

- Risk factors for chlamydia/other STI (age < 25 years, new sexual contact in the last year, > 1 partner in the last year)
- Cervical or vaginal discharge with risk factor for STI
- Acute pelvic pain and/or symptoms or signs of PID
- Proctitis/proctocolitis according to risk
- Persons diagnosed with other STI
- Sexual contact of persons with an STI or PID
- Termination of pregnancy
- Any intrauterine interventions or manipulations

**Laboratory diagnostics**

- NAATs in clinical specimens
- If not available or affordable, isolation in cell culture or direct fluorescence assays (DFA)
- **Currently available rapid POCT not recommended in Europe!**

**Follow-up**

- Repeated testing in 3–6 months of young women and men (<25 y/o) who test positive

**Test of cure**

- Not routinely
- Recommended in pregnancy, complicated infections, extra-genital infections, etc.

### Importance and benefit of using sensitive diagnostic platforms

PLOS MEDICINE 2018

#### Pelvic inflammatory disease risk following negative results from chlamydia nucleic acid amplification tests (NAATs) versus non-NAATs in Denmark: A retrospective cohort

Berhan Davers, Katy M. E. Turner, Thomas Benfield, Maria Frakund, Bent Andersen, Henrik Westh, on behalf of the Danish Chlamydia Study, Håkon Wård

Retrospective observational study

272,105 women tested 1998–2001  
45% by NAATs

**Conclusion**  
Women with a non-NAAT negative test have a 17% higher adjusted risk of PID by 12 months compared to a NAAT negative chlamydia test.

### Major challenges to chlamydia control and their implications/effects


- Natural history of infection**
  - Asymptomatic infections
  - No lasting immunity to infection
  - No vaccine

Ongoing transmission
- Societal influences**
  - Stigma (STIs)
  - Resource limitations

Reduced participation  
Limited implementation
- Gaps in the evidence**
  - Burden of disease in the population
  - Timing of tubal damage
  - Contribution of chlamydia to complications
  - Role of repeat infection in tubal damage

Design of control interventions  
Clinical and cost-effectiveness measurements (M&E)

Source: ECDC guidance on chlamydia control in Europe



### Conclusions




Defining chlamydia epidemic in EU/EEA is challenging

Young people are most at risk of chlamydia infection in EU/EEA

Testing young women can reduce the risk of developing PID

Sensitive diagnostics (NAAT) - the methods of choice

There are still gaps in evidence!



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