

RISK OF PELVIC INFLAMMATORY DISEASE FROM CHLAMYDIA AND GONORRHOEA AMONG AUSTRALIAN SEXUAL HEALTH CLINIC ATTENDEES

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Background: Pelvic inflammatory disease (PID) commonly develops as a sequelae of a sexually transmitted infection. We estimated the PID burden in an Australian sexual health clinic population that could potentially be avoided if chlamydia or gonorrhoea infection were prevented.

Methods

- Demographic, sexual risk behaviour and clinical data for females not reporting sex work and aged 16-49 years at first visit to Melbourne Sexual Health Centre were collected from the electronic patient database for the period January 2006 to June 2013.
- Chlamydia and gonorrhoea tests were based on clinical and risk assessment and their diagnoses on SDA/PCR^A from urine, high vaginal &/or cervical samples.
- PID diagnosis was clinical: based on uterine, cervical motion, or adnexal tenderness in sexually active women with pelvic pain where no cause beside PID was identified.

Analysis

- Two separate analyses were conducted for: 1) *Chlamydia-tested women*, and 2) *Chlamydia & gonorrhoea tested women* (a subset of *chlamydia-tested women*).
- Univariable and multivariable logistic regression were conducted to identify factors associated with PID. The adjusted population attributable risk percent (PAR%)^B for PID associated with a current chlamydia or gonorrhoea infection was calculated.

A: SDA: strand displacement amplification; PCR: polymerase chain reaction. B: PAR measures the amount of PID in the female clinic population potentially avoided if the infection were eliminated.

Results

Chlamydia tested women

- Of 15690 chlamydia tested women, 1279 (8.2%, 95%CI 7.7-8.6) were positive and 436 (2.8%, 95%CI 2.5-3.0) had PID diagnosed (table 1).
- Multivariable analysis (table 2) found a PID diagnosis was more likely with chlamydia infection, an IUD, and younger age (16-29 years) and less likely with consistent condom use (past 3 months). The PAR% (figure 1) of PID for chlamydia was 14.1% (95%CI 9.9-18.1).

Chlamydia & gonorrhoea tested women

- Of 8839 *chlamydia/gonorrhoea* tested women, 681 (7.7%, 95%CI 7.2-8.3) tested positive only for chlamydia, 30 (0.3%, 95%CI 0.2-0.5) only for gonorrhoea, 22 (0.2%, 95%CI 0.2-0.4) for gonorrhoea and chlamydia, & 419 (4.7%, 95%CI 4.3-5.2) had PID diagnosed (table 1).
- A PID diagnosis was more likely (table 2) for women with chlamydia, gonorrhoea or dual chlamydia and gonorrhoea infection, an IUD, and younger age.
- The PAR% (figure 1) of PID was 14.4% (95%CI 10.2-18.4) overall for any chlamydia or gonorrhoea positive female, and was 12.5% (95%CI 8.5-16.3) for chlamydia only, 0.9% (95%CI 0.1-1.8) for gonorrhoea only, and 1.0% (95%CI 0.0-1.9) for concurrent infections.

Table 1: Patient characteristics and PID prevalence

		Chlamydia tested		Chlamydia/gonorrhoea tested	
		n	% PID	n	% PID
	Total	15690	2.8	8839	4.7
Age group (years)	16-29	12080	3.0	6596	5.2
	30-49	3610	2.1	2243	3.3
Country of birth	Australia	6529	2.9	3591	5.1
	Other	9161	2.7	5248	4.5
Current contraception	Any hormonal	4362	2.7	2185	5.2
	IUD	263	6.8	157	10.8
	Other/not reported	11065	2.7	6497	4.4
Chlamydia and gonorrhoea test results	Negative	14411	2.4	8106	4.0
	Chlamydia positive	1279	7.4	681	12.0
	Gonorrhoea positive	NA		30	16.7
	Chlamydia & gonorrhoea	NA		22	22.7
MSP last 3 months	None	1239	0.8	660	1.5
	One	8059	2.9	4628	4.8
	Two or more	6392	3.1	3551	5.3
Condom use with MSP, last 3 months	No MSP/vaginal sex	1351	0.8	715	1.5
	Always	2572	1.7	1267	3.5
	Not always	11767	3.2	6857	5.3
MSP, last 12 months	None	514	0.6	273	1.1
	One	4059	2.9	2457	4.6
	Two	3418	2.6	1873	4.6
	Three or more	7699	2.9	4236	5.1
Condom use with MSP, last 12 months	No MSP/vaginal sex	612	0.8	323	1.6
	Always	2299	1.7	1149	3.3
	Not always	12779	3.1	7367	5.1

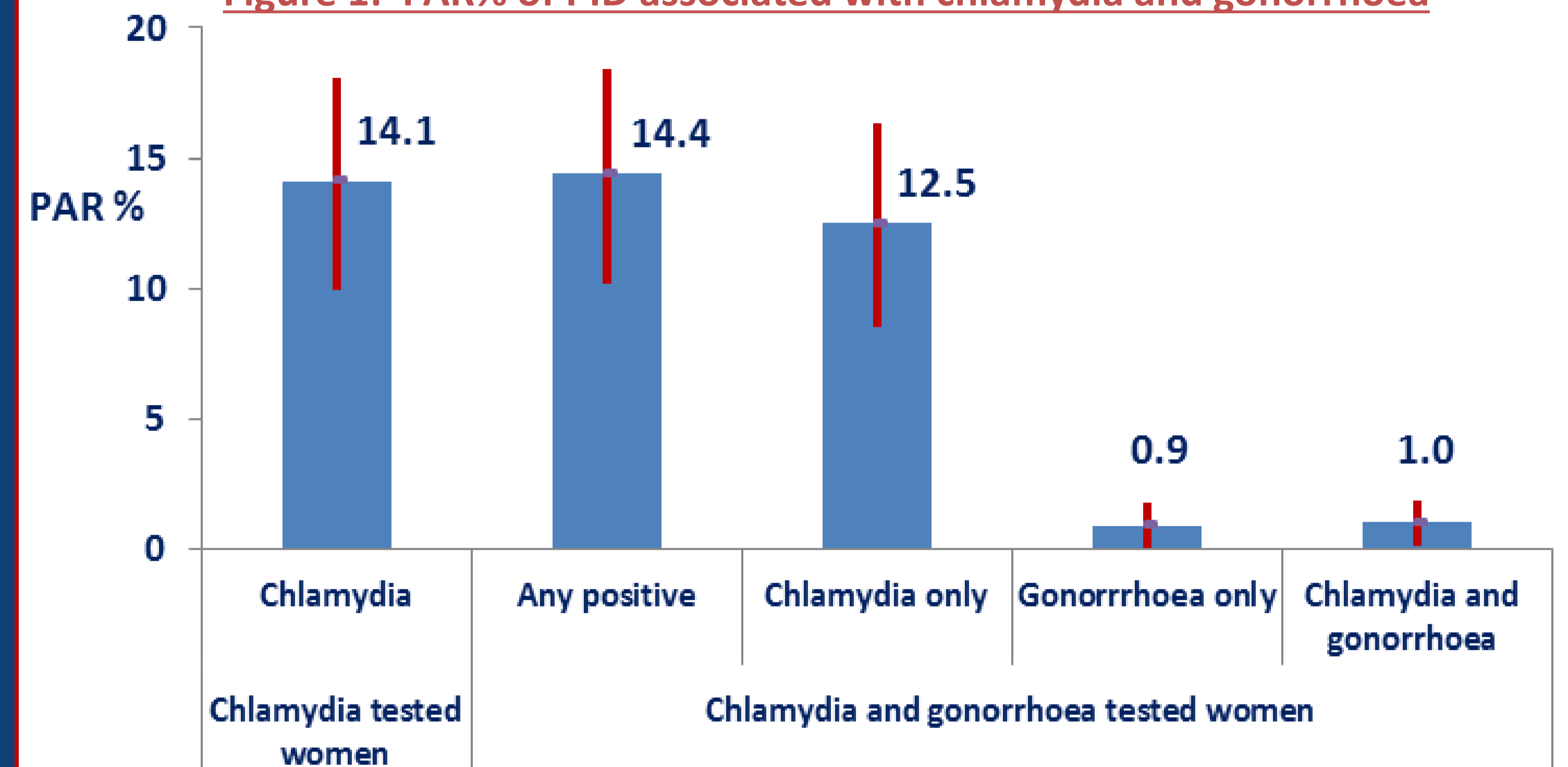
IUD, intrauterine device; NA, not applicable; MSP, Male sexual partner/s

Table 2: Factors associated with PID

		Chlamydia tested	Chlamydia/gonorrhoea tested
		AOR (95% CI)	AOR (95%CI)
Age group (years)	16-29	1.3 (1.0-1.7)	1.5 (1.1-1.9)
	30-49	1.0	1.0
Country of birth	Australia	1.2 (1.0-1.4)	1.3 (1.0-1.5)
	Other	1.0	1.0
Current contraception	Any hormonal	0.9 (0.7-1.1)	1.0 (0.8-1.3)
	IUD	2.6 (1.6-4.4)	2.7 (1.6-4.5)
	Other/not reported	1.0	1.0
Chlamydia and gonorrhoea test results	Negative	1.0	1.0
	Chlamydia positive	3.1 (2.4-3.9)	3.0 (2.3-3.9)
	Gonorrhoea positive	NA	4.6 (1.7-12.1)
	Chlamydia & gonorrhoea	NA	6.3 (2.3-17.4)
Condom use with MSP, last 3 months	No MSP/vaginal sex	0.3 (0.1-0.5)	0.3 (0.2-0.6)
	Always	0.6 (0.4-0.8)	0.7 (0.5-1.0)
	Not always	1.0	1.0

AOR, adjusted odds ratio; IUD, intrauterine device; NA, not applicable; MSP, Male sexual partner/s. MSP, past 3 & 12 months, condom use, past 12 months omitted from multivariable models due to collinearity.

Figure 1: PAR% of PID associated with chlamydia and gonorrhoea



PAR% adjusted for age group, contraception, condom use past 3 months, country of birth

Conclusion:

- PAR can provide a useful measure of the PID burden in a population that might be avoided by preventing chlamydia or gonorrhoea infection.
- In a high chlamydia, low gonorrhoea prevalence population, eliminating chlamydia could avoid significantly more PID than eliminating gonorrhoea.

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