

# REGIONAL VARIATION IN EMERGENCY DEPARTMENT PRESENTATION RATES OF CHLAMYDIA RELATED MORBIDITY IN AUSTRALIA

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**Background:** Pelvic inflammatory disease (PID) and ectopic pregnancy among women and epididymitis among men are important sequelae of genital chlamydia infection. In Australia, chlamydia prevalence is higher among younger populations, Indigenous Australians, and in regional and remote areas.<sup>1,2</sup> The burden of chlamydia sequelae by Australian geographical region is unknown. We calculated the rate of chlamydia related morbidity diagnoses in hospital emergency departments to assess whether there is any regional variability in presentations. These data will be subsequently used as a baseline to measure the performance of a chlamydia testing intervention in primary care.

## Methods

- Public hospital emergency department (ED) data (including residential postcode) for patients aged 15-44 years with a primary diagnosis of PID, ectopic pregnancy or epididymitis were obtained for three Australian states (*New South Wales, Queensland, Victoria*) for the years 2009 and 2010.
- Australian Bureau of Statistics estimated resident population data by residential postcode were obtained for 2009 and 2010.
- A total of 1633 postcodes from the three states were coded for:
  - Remoteness (*metropolitan, inner regional, outer regional/remote*)<sup>3</sup>
  - Socio-economic group (SES) in deciles, based on the Index of Relative Socio-Economic Disadvantage.<sup>4</sup>

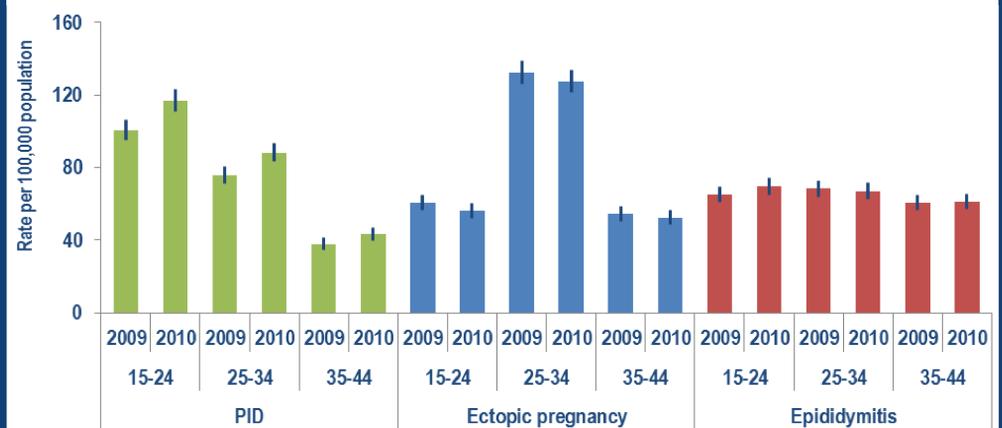
## Analysis

- Age, sex and year specific ED rates of PID, ectopic pregnancy and epididymitis per 100,000 population by residential postcode were calculated.
- Of 1633 postcodes in the analysis, 42%, 37% and 42% had no PID, ectopic pregnancy or epididymitis cases respectively.
- Zero Inflated Poisson regression was conducted to assess regional variation in rates, adjusting for age, remoteness, SES and year.

## Results - Population rates

- During 2009-2010, overall ED rates per 100,000 population among 15-44 year old residents were 78.5 (95%CI: 76.4-80.5) for PID, 84.1 (95%CI: 82.0-86.3) for ectopic pregnancy, and 66.4 (95%CI: 64.5-68.3) for epididymitis.
- Sex specific PID, ectopic pregnancy and epididymitis rates by age and year are shown in Figure 1.

**Figure 1: Sex specific chlamydia sequelae rates per 100,000 population, by age-group and year**



**Table 1: Factors associated with variation in rates of chlamydia sequelae**

		Univariable		Multivariable	
		IRR	(95% CI)	IRR	(95% CI)
<b>PID</b>					
Age group in years	15-24	2.64	(2.44-2.86)	2.58	(2.39-2.79)
	25-34	2.00	(1.84-2.17)	2.01	(1.85-2.17)
	35-44	1.0		1.0	
Remoteness of postcode	Metropolitan	1.0		1.0	
	Inner regional	1.53	(1.41-1.65)	1.35	(1.25-1.46)
	Outer regional/remote	2.09	(1.87-2.33)	1.88	(1.68-2.10)
SES	Decile of disadvantage	1.09	(1.07-1.10)	1.07	(1.06-1.08)
Year	2009	1.0		1.0	
	2010	1.14	(1.07-1.20)	1.14	(1.07-1.20)
<b>Ectopic pregnancy</b>					
Age group in years	15-24	1.11	(1.02-1.20)	1.08	(1.00-1.17)
	25-34	2.30	(2.15-2.46)	2.31	(2.16-2.47)
	35-44	1.0		1.0	
Remoteness of postcode	Metropolitan	1.0		1.0	
	Inner regional	1.15	(1.07-1.23)	1.10	(1.03-1.18)
	Outer regional/remote	1.21	(1.10-1.33)	1.08	(0.98-1.19)
SES	Decile of disadvantage	1.06	(1.05-1.07)	1.06	(1.05-1.07)
Year	2009	1.0		1.0	
	2010	0.96	(0.91-1.01)	0.95	(0.91-1.01)
<b>Epididymitis</b>					
Age group in years	15-24	1.11	(1.03-1.19)	1.08	(1.01-1.17)
	25-34	1.12	(1.04-1.21)	1.12	(1.04-1.20)
	35-44	1.0		1.0	
Remoteness of postcode	Metropolitan	1.0		1.0	
	Inner regional	1.39	(1.27-1.52)	1.28	(1.17-1.40)
	Outer regional/remote	1.54	(1.33-1.78)	1.41	(1.22-1.64)
SES	Decile of disadvantage	1.06	(1.05-1.07)	1.05	(1.04-1.06)
Year	2009	1.0		1.0	
	2010	1.02	(0.96-1.09)		

IRR, Incident rate ratio; 95% CI, 95% confidence interval; SES, socio-economic status

## Results – Zero Inflated Poisson (Table 1)

- PID:** rates were higher for females residing of inner regional (IRR=1.35; 95%CI: 1.25-1.46) and outer regional/remote areas (IRR=1.88; 95%CI: 1.68-2.10) compared with metropolitan areas; increased by 7% per decile of increasing disadvantage of postcode and by 14% from 2009 to 2010; and were over two-fold higher in younger women compared with women aged 35-44 years.
- Ectopic pregnancy:** rates were 10% higher for female residents of inner-regional compared with metropolitan areas; increased by 6% per decile of increasing disadvantage; and were highest among 25-34 year-old women (IRR 2.31; 95%CI: 2.16-2.47).
- Epididymitis:** rates were higher for male residents of inner-regional (IRR=1.28; 95%CI: 1.17-1.40) and outer regional/remote areas (IRR=1.41; 95%CI: 1.22-1.64) than metropolitan areas, increased by 5% per decile of increasing disadvantage, and were 8-12% higher in men aged 15-34 years compared with 35-44 years.

## Conclusion

Higher rates of ED presentations for chlamydia sequelae in non-metropolitan Australian residents might be explained by higher chlamydia prevalence or variable access to primary healthcare in these areas. Further research is needed to determine whether people in rural areas are accessing emergency departments rather than a GP. Subsequent analyses will include assessing morbidity presenting in general practice and hospital admissions.

**Disclosure of Interest:** These data are being analysed as part of the Australian Chlamydia Control Effectiveness Pilot (ACCEPT) study funded by the Commonwealth Department of Health and the National Health and Medical Research Council.

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