Short reports

SYPHILIS IN REMOTE NORTH QUEENSLAND

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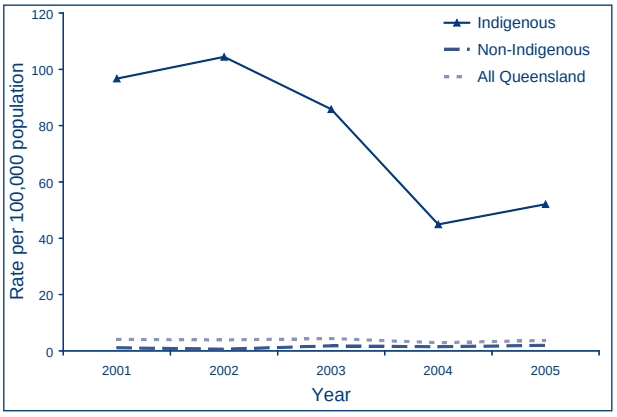
The notification rate for infectious syphilis (i.e. infection of less than 2 years duration) in Queensland has remained fairly static over the last 5 years but the pattern of infection appears to be changing (Figure 1). Between 2001 and 2005, the non-Indigenous rate climbed from 1.1 to 2.0 cases per 100,000 population, while the rate in the Aboriginal and Torres Strait Islander population across the state fell from 97 to 52 cases per 100,000 population – both statistically significant but divergent trends ($p < 0.001$).[1]

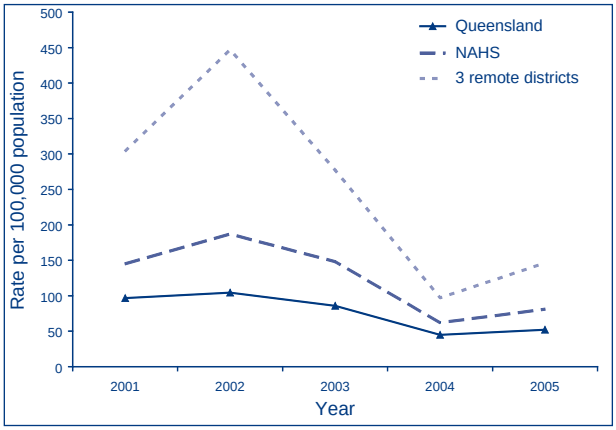
Figure 1. Notification rate of syphilis, Queensland, 2001 to 2005



A significant majority of Indigenous infectious syphilis notifications in Queensland arise in remote parts of the Northern Area Health Service (NAHS) in populations that historically have sustained a disproportionate burden of disease and where cases of congenital syphilis are notified almost every year.[2] Hence, we were keen to explore the implications for these remote populations of the changing epidemiology of syphilis in the state.

Figure 2 illustrates that the downward trend in Indigenous syphilis rates state-wide is amplified in 3 remote health service districts where 29% of the NAHS Aboriginal and Torres Strait Islander population reside (Map). In contrast, the notification rate for the Aboriginal and Torres Strait Islander population living in the NAHS but outside these remote districts, showed no significant trend over the same period ($p = 0.092$), suggesting that changes within these districts were largely responsible for the observed fall in the Queensland Indigenous notification rate.

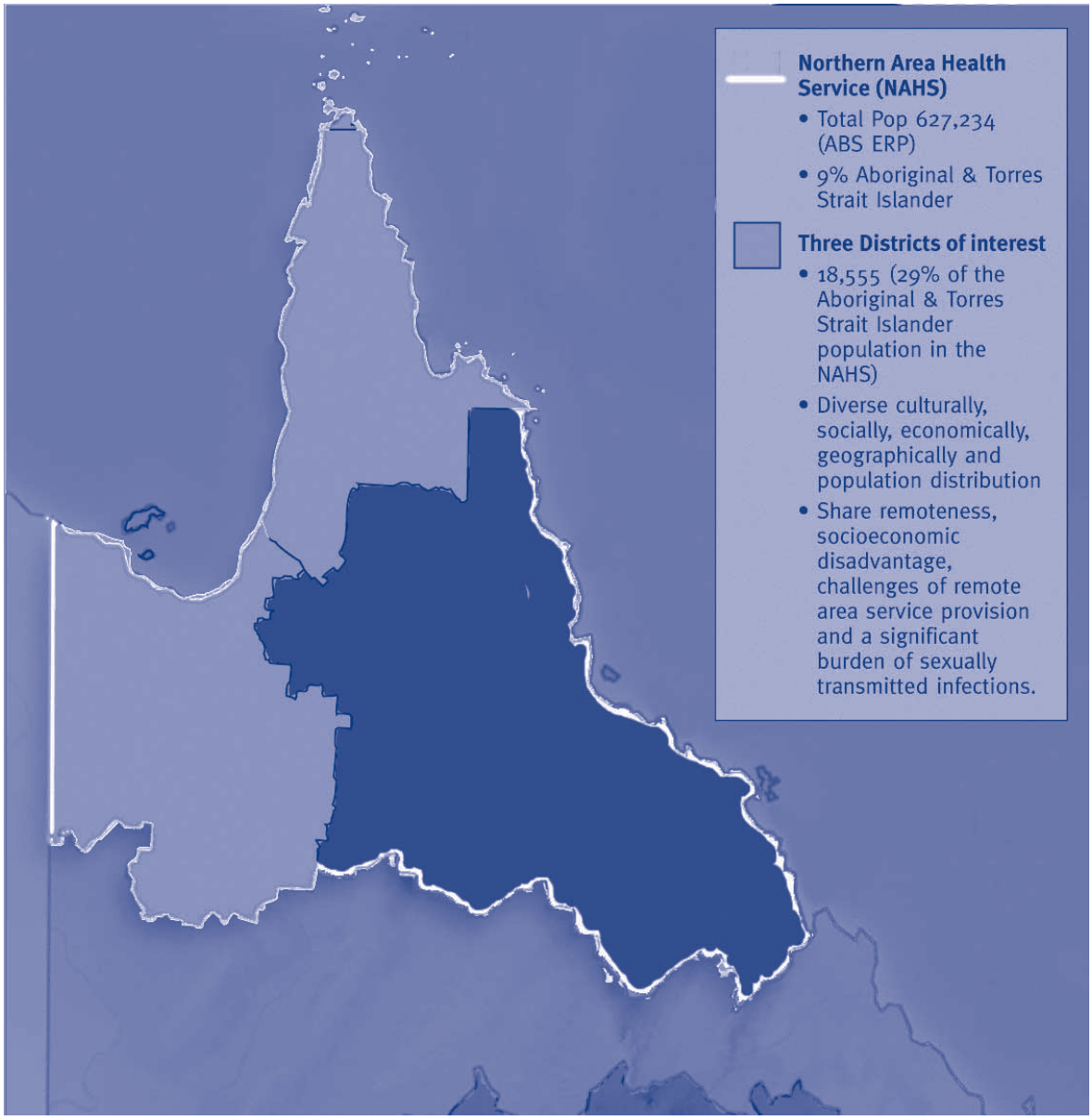
Figure 2. Notification rate of syphilis in Aboriginal and Torres Strait Islander populations, selected regions, 2001 to 2005



Relevant health system developments in the three remote districts

In recent years, the threat of an HIV epidemic has led to a sharper focus on bacterial sexually transmissible infection (STI) control as an HIV prevention strategy. As the diagnosis of syphilis in this setting usually relies on testing asymptomatic but 'at risk' individuals, a central plank of this strategy is to increase STI testing among the young 'at risk' population. Remote area primary health care providers are requested to offer all men and women aged 15–39 at least one test for syphilis, chlamydia and gonorrhoea each year. Queensland Health Pathology and Scientific Services (QHPSS) has been the sole pathology provider to all the remote (largely Indigenous) communities in the three districts during the period 2000 to 2005 with a small amount of private pathology service activity occurring in the more urban (non-Indigenous) areas of one district. Data from QHPSS describe increased syphilis testing from 4,054 to 6,119 tests for 2000 to 2005 with the increase in testing per capita showing a statistically significant trend in two of the three districts ($p < 0.001$). The strategy may also have helped focus STI testing more in the 'at risk' age groups. Population level data for two of the districts indicates that 30% of the women and 21% of the men aged 15–39 years had had at least one syphilis serology test during 2005 (Fagan P, STI District reports, 2005). An assessment of testing activity over time in NAHS populations outside these three districts has not been undertaken and would be complicated by multiple providers and uncertain denominators. However, the finding of decreasing notifications over a period

Map. Remote districts where syphilis notifications are declining in Aboriginal and Torres Strait Islander populations



of increased testing in remote districts strengthens the argument for a reduced population level of disease in these areas.

Syphilis Register data allows the analysis of 'time to treatment' for all cases in the NAHS since 2001 (Table) – demonstrating an average annual improvement of 17% for each year since ($p < 0.001$). This is good news for individuals with syphilis, and at the population level it decreases the duration of infectiousness and potentially reduces the number of new infections arising from a single source. Electronic data interchange (improving the timeliness of notifications), the enhanced surveillance and support provided by the Syphilis Register public health nurse in Cairns, and the increased focus on STI as a health issue in remote areas, may all be contributing to this sustained improvement in 'time to treatment'.

A final point ot note is that azithromycin is now widely used in north Queensland (usually a single oral dose of 1 gm) for the treatment of symptomatic and screen detected cases and for contacts of the other common bacterial STI.[3] When given at a higher dose (2 gm orally), it is also effective against *Treponema pallidum*.[4] It is possible that azithromycin, when used at the lower dose, may sometimes be adequate against very early treponemal infection and could contribute to a reduction in community prevalence.

Is syphilis declining in remote Indigenous populations in north Queensland?

Only time will tell if syphilis in remote Indigenous populations in north Queensland is declining. The

Table. Time to treatment for infectious syphilis in the Northern Area Health Service, by year of notification

Year	Number of cases	No record of treatment	Time to treatment (days) – all cases		
			Range	Median*	75% treated
2001	98	14	–1 to 1,469	19	147
2002	122	7	–5 to 928	12	21
2003	103	5	0 to 768	10	25
2004	48	3	–9 to 400	7	23
2005	63	5	0 to 547	7	17

p<0.001; Cox regression Hazard ratio = 1.17 (C.I. 1.08, 1.27).

factors outlined above suggest an improved health system response to syphilis but the downward trend in notifications needs to be interpreted with caution.

Firstly, despite increased testing being accompanied by a steady reduction in new cases over this period, one of the three districts went against this trend and recorded a 17% drop in syphilis testing since 2000 (QHPSS data).

The level of periodic testing coverage of an 'at risk' population that would be required (assuming comprehensive investigation and timely treatment of all identified cases) to achieve a specified reduction in community prevalence of syphilis, is uncertain. Certainly, the magnitude of the contribution to the downward trend in notifications that the level reported here (30% for women and 21% for men aged 15 to 39 years in 2005) is debatable.

Furthermore, the decrease in infectious syphilis has not yet translated into a noticeable change in congenital syphilis. Since 2001, there have been 12 cases of congenital syphilis notified in Queensland (spread evenly across the years), and two-thirds came from these three remote districts. Syphilis in pregnancy, long recognised as a significant cause of pregnancy loss and perinatal death in north Queensland,[5] is associated with a high population prevalence of infection.

Finally, the time period for which we have reliable data is relatively brief. The natural history of syphilis may be such that there are peaks (and troughs) in notifications over an 8 to 11 year cycle corresponding with new infections arising as herd immunity from earlier epidemics wanes.[6] If this is so, then 5 years is not a sufficient period over which to assess long term trends.

Despite the recent fall in notifications, syphilis persists in Aboriginal and Torres Strait Islander populations at unacceptably high levels – 52 cases per 100.000 population is many times higher than other Indigenous and non-Indigenous populations across the developed world.[7] Experience suggests that a sustained reduction in syphilis and the prevention of congenital syphilis rely on the maintenance of efforts in syphilis control, vigilant antenatal care and on-going collaboration between obstetric, paediatric and sexual health services.

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References

1. Fagan PS, Cannon FM. Syphilis and genital ulcer disease in 2006: a Far North Queensland perspective. *Australasian Sexual Health Conference,* Melbourne 2006; poster presentation.
2. Sweeny AL. Diverging trends in infectious syphilis, Queensland Australia 2002–2005. *Australasian Epidemiological Association Conference*, Melbourne 2006; presentation.
3. Royal Flying Doctor Service; Queensland Health, North Queensland Workforce Unit. *Primary Clinical Care Manual.* 4th edn 2005. p. 375–394.
4. Hook EW, Martin DH, Stephens J, Smith BS, Smith K. A randomised, comparative pilot study of azithromycin versus benzathine penicillin G for treatment of early syphilis. *Sex Transm Dis* 2002;29:486–490.
5. Humphrey MD, Bradford DL. Congenital syphilis: still a reality in 1996. *Med J Aust* 1996;165:382–385.
6. Grassly NC, Fraser C, Garnett GP. Host immunity and synchronized epidemics across the United States. *Nature* 2005;433:417–421.
7. Department of Health and Human Services, National Center for HIV, STD and TB Prevention, Division of STD Prevention. *National Plan to eliminate syphilis from the USA.* May 2006.