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Syphilis

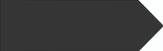
Anik Ray
CNS



Rapid diagnostic testing to improve access to screening for syphilis in prison

Montaño, Flores, Villarroel-Torrico, Cassio, Salcedo-Meneses, Valencia-Rivero, Castro-Soto, Gétaz-Jiménez, Wolff, Bermúdez-Paredes H1, Gétaz

- **Aim:** To assess the accuracy of on-site rapid treponemal test for syphilis diagnosis for incarcerated women in Bolivia.



Methods

- ▶ Sample size – 219
- ▶ Serological samples were tested for RPP, TPPA, FTA-AB, and PRADS
- ▶ Two different FTA tests were used
- ▶ RPR + TPPA = true positive



Results

- ▶ PRADS
High sensitivity rate (100% 95% CI: 87.7-100)
High specificity rate (94.2% 95%CI: 89.9-97.1)
- ▶ FTA tests
FTA-Biocientífica test sensitivity rate (75% 21/28; 95%CI: 56.7-87.3)
when taking the FTA-bioMérieux test as a reference FTA-Biocientífica test has a sensitivity rate of 66.7%: 22/33, 95% confidence interval (CI) 49.6-80.2

Strengths and Limitations

- ▶ Small sample size
- ▶ High participation rate
- ▶ Risk of misdiagnosis vs over treatment

Patient 1

▶ Presenting issues

45 year old MSM presented to ED with a couple of weeks of hazy/blurry vision in both eyes; bit of tension headache at the same time, worsening vision over the next few days and then stabilised.

▶ Results

LP done in ED which showed positive TPPA and negative RPR
IV antibiotics started at that time, attended Sydney Eye Hospital, no other neurological symptoms

▶ Social Hx

Monogamous with RMP 14years, open relationship with CMPs prior to RMP and female partners before that

▶ PMHx

Type 1 DM, diagnosed 35years ago, under good control

HIV negative, unsure of previous syphilis tests

▶ Current meds

IV penicillin
PO prednisolone
insulin
mirtazepine nocte
Ativan PRN

▶ Advice to patient

Reassured that he's getting the correct treatment and doesn't need any further testing or investigations from our point of view (blood test results still pending; HIV negative)

Patient 2

- Presenting issues

Had a bit of a cough and sore throat – GP started on doxycycline and roxithromycin few days later he woke up with blurry vision in lower part of left eye's field of vision
Initially treated as stroke but then syphilis serology was positive and started on antibiotics
No other neurological symptoms
No other symptoms suggestive of syphilis

- Results

RPR 1:28
HIV, Hep C, CT/GC urine PCR pending
TB quantiferon gold (negative), LP not done at the time he was seen at SSHC

- Social Hx

Monogamous with RFP for 10 years, last sex with her was around Feb 2020

- PMHx

Nil PMHx

- currents Meds

IV penicillin

- Advice to patient

General discussion about syphilis
Explained that his serology plus symptoms are consistent with it being secondary neurosyphilis, reassured that this is curable although vision may not return to 100% normal.

The importance of proper and prompt treatment of ocular syphilis: A lesson from permanent vision loss in 52 eyes

Xin Gu, Ying Gao, Yan Yan, Michael Marks, Lin Zhu, Haikong Lu, Zhifang Guan, Mei Shi, Liyan Ni, Ruirui Peng, Wei Zhao, Juan Wu, Tengfei Qi, Sheng Lu, Yihong Qian, Weiming Gong, Pingyu Zhou

Ocular Syphilis: An Update

Parthopratin Dutta Majumder, Elizabeth J. Chen, Janika Shah, Dawn Ching Wen Ho, Jyotirmay Biswas, Leo See Yin, Vishali Gupta, Carlos Pavesio & Rupesh Agrawal

Bilateral ocular involvement with syphilis in a known HIV patient –case report

Boon Lin Teh, Mohammad Kamran Khan, Ambreen Butt, Lucia Kuffova,

TABLE 1. Spectrum of ocular involvement in syphilis.

Ocular structure	Type of lesion/involvement
Eyelid	Chancere
	Gumma
Conjunctiva	Tarsitis
	Ulcerative blepharitis
	Chancere
Orbit	Conjunctivitis
	Tarsitis
Cornea	Periostitis
	Gumma (extraocular muscle, lacrimal gland or within orbit)
Sclera	Interstitial keratitis
	Ulcers
	Deep punctate keratitis
	Keratitis profunda
	Keratitis punctate profunda
	Keratitis pustuliformis profunda
Iris and ciliary body	Keratitis linearis migrans
	Episcleritis
Pupil	Scleritis
	Gumma
Lens	Roseolae
	Papules
Glaucoma	Gumma
	Argyll Robertson Pupil
Optic nerve	Capsular rupture and necrotizing cortical inflammation
	Traumatic dislocation
Motility dysfunctions	Secondary glaucoma
	Perineuritis
Retina and vitreous	Anterior optic neuritis
	Neuroretinitis
	Retrobulbar neuritis
	Papilloedema
	Optic atrophy
	Oculomotor, abducens, trochlear associated paresis
Retina and vitreous	Basilar meningitis
	Periodic alternating nystagmus
	Chorioretinitis
	Necrotizing retinitis
	Retinal vasculitis
	Central retinal artery/vein occlusion
Retina and vitreous	Vitritis
	Exudative retinal detachment

Ocular Syphilis: An Update

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TABLE 2. Recommended regimens for the treatment of syphilis (CDC guideline, 2015)⁶⁴.

Stages of syphilis	Recommended regimen for adults
Primary and secondary syphilis	Benzathine penicillin G 2.4 million units IM in a single dose
Early latent syphilis	Benzathine penicillin G 2.4 million units IM in a single dose
Late latent syphilis	Benzathine penicillin G 7.2 million units, administered as 3 doses of 2.4 million units IM/week
Tertiary syphilis with normal CSF examination	Benzathine penicillin G 7.2 million units, administered as 3 doses of 2.4 million units IM/week
Neurosyphilis and ocular syphilis	Aqueous crystalline penicillin G 18–24 million units/day, administered as 3–4 million units IV every 4 hours or continuous infusion for 10–14 days
	<i>Alternative Regimen:</i> Procaine penicillin G 2.4 million units IM/day PLUS Probenecid 500 mg orally four times a day, both for 10–14 day



Journal club on syphilis (SSHIC)



Registered Nurse Ruiqi Fan

The image shows two overlapping screenshots. The top screenshot is from TripIt, displaying search results for 'syphilis' with 8,301 results. It includes a search bar, navigation links, and a list of search results with titles like '1. What is the effect of syphilis testing frequency on the incidence of syphilis in men who have sex with men (MSM)?' and '2. Antibiotic treatment for newborns with congenital syphilis.' The bottom screenshot is from PubMed, showing search results for 'syphilis testing'. It features a 'New PubMed!' banner, a search bar, and a list of search results with titles like 'Syphilis testing', 'The Evidence That Incentivized Syphilis Testing Controls Syphilis Is Compelling: What Is Needed to Act?', and 'Suboptimal Prenatal Syphilis Testing Among Commercially Insured Women in the United States, 2013.'

Syphilis in China: results of a national surveillance programme

Chen, Zhi-Qiang et al. "Syphilis in China: Results of a National Surveillance Programme." *The Lancet* 369.9556 (2007): 132-138.

Background:

Syphilis was first recognised in mainland China in 1505. After Communist party assumed power in 1949, the Chinese people were suffering one of the biggest syphilis epidemics in human history.

Surveillance studies in the 1950s showed that the infection was present in as many as 84% of sex workers and 5% of the general population in some large cities, and 2-3% of rural residents.

In 1952, the government instituted mass screening, provided free treatment to infected individuals, and shut down brothels.

Virtual eradication of syphilis and other STD is achieved in 1960s by data provided from Chinese government.

However, since Economic and social reforms opened China to the world, it also appeared to have laid the foundation for the re-emergence of syphilis.

The purpose of this report is to describe the growth and magnitude of the Chinese syphilis epidemic based on Chinese governmental surveillance data.

Method: For each syphilis case, doctors or their assistants filled out a standardised STD reporting card with demographic (age in 10 year intervals, sex, home location, marital status, occupation, and education), clinical (diagnostic evidence, onset of symptoms, stage of syphilis, presence of other STD), and epidemiological information (route of acquisition)

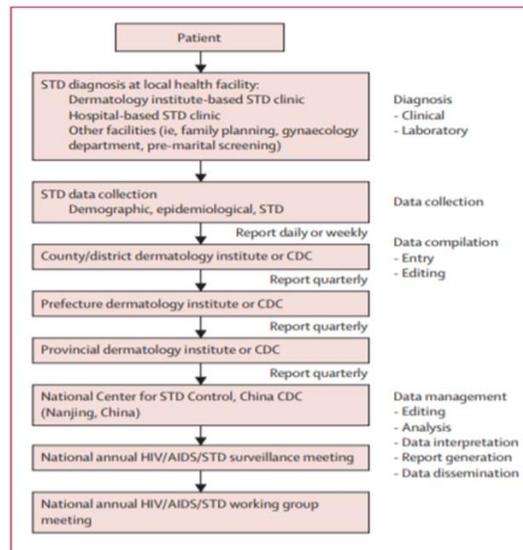


Figure 2: Reporting structure of China's nationwide STD surveillance system

Key results:

The incidence of primary and secondary syphilis has increased to 5.67 cases per 100 000 people in 2005.

But this rate was substantially higher than that in most developed countries; for example, the USA reported 2.7 cases of primary and secondary syphilis per 100 000 individuals in 2004.

Incidence of congenital syphilis had grown at a very rapid rate with an average yearly increase of 71.9%, from 0.01 cases per 100 000 births in 1991 to 19.68 cases per 100 000 births in 2005.

Conclusion:

The number of cases reported might not accurately reflect the true extent of the epidemic. In an internal, unpublished quality-control study done in 1999, STD surveillance officials found that in one province, more than 75% of STD cases were not reported. Private practitioners were the least reliable, reporting only 0.2% of cases, followed by district-level hospitals (7.9%), provincial-level hospitals (15.4%), and city-level hospitals (35.5%).

Due to traditional culture of favouring male in Chinese society especially in rural village area. A lot of female newborn won't survive until becoming adults. Since the 1980s China has had a skewed sex ratio.

Author conducted systematic review of published work to estimate the prevalence rate for syphilis in different groups: antenatal women 0.45%; migrant workers 1.4%; possible female sex workers 0.83%; incarcerated female sex workers 12.49%; drug users 6.81%; and men who have sex with men 14.6%.

More and more young people also start to experiment sex at earlier ages and before marriage. Additionally, reduced governmental emphasis on public-health services, increasing costs of individual health care, and reduced availability of health insurance might have contributed to increasing syphilis rate in China.

A Nationwide Spatiotemporal Analysis of Syphilis Over 21 Years and Implications for Prevention and Control in China

Tao, Yusha et al. "A Nationwide Spatiotemporal Analysis of Syphilis Over 21 Years and Implications for Prevention and Control in China." *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America* 70.1 (2020): 136-139.

Background:

According to Chinese government reports, syphilis is nearly eliminated in the 1960s. However, during the past 20 years syphilis has made a resurgence.

To compare, there were more syphilis cases in the province of Guangdong in 2008 than syphilis reported in the entire European Union during the same year. In responding to these trends, the Chinese Ministry of Health recently announced a 10-year plan for syphilis control and prevention, recognizing the re-emergence of syphilis as an important public health threat and renewing interest in syphilis control programs.

Method:

We collected publicly available mandatorily reportable surveillance data from the Public Health Scientific Data website and National Centre for Sexually Transmitted Disease Control website for all reported syphilis infection between 2004-2016 and 1995-2013 respectively.

Results:

Table 1. Yearly Cases and Incidence (1/100 000 Newborns) of Syphilis, Classified by Disease Stages

Year	Primary	Secondary	Tertiary	Congenital	Latent	Primary and Secondary	Total
1995	5158 (0.4)	4516 (0.4)	19 (0.0)	35 (0.2)	1608 (0.1)	9674 (0.8)	11336 (1.0)
1996	9036 (0.8)	9066 (0.8)	80 (0.0)	35 (0.2)	2548 (0.2)	18102 (1.6)	20765 (1.8)
1997	14139 (1.2)	16085 (1.3)	72 (0.0)	109 (0.5)	3268 (0.3)	30224 (2.5)	33673 (2.8)
1998	23303 (1.9)	25467 (2.1)	143 (0.0)	185 (0.9)	4760 (0.4)	48770 (4.0)	53858 (4.4)
1999	35805 (2.9)	36615 (3.0)	285 (0.0)	359 (1.9)	7342 (0.6)	72420 (5.9)	80406 (6.5)
2000	36075 (2.9)	15424 (2.8)	268 (0.0)	468 (2.6)	7946 (0.6)	71499 (5.7)	80181 (6.4)
2001	32304 (2.6)	33768 (2.7)	199 (0.0)	677 (4.0)	10297 (0.8)	66072 (5.2)	77245 (6.1)
2002	29978 (2.3)	29675 (2.3)	277 (0.0)	971 (5.9)	13428 (1.1)	11653 (4.7)	74329 (5.8)
2003	30080 (2.3)	26415 (2.1)	327 (0.0)	1155 (7.2)	14576 (1.1)	56495 (4.4)	72553 (5.6)
2004	40212 (3.1)	30539 (2.4)	523 (0.0)	2402 (16.6)	18897 (1.5)	70751 (5.4)	92573 (7.1)
2005	46296 (3.6)	34776 (2.7)	929 (0.1)	3968 (27.3)	40476 (3.1)	81072 (6.2)	126445 (9.7)
2006	55930 (4.3)	39174 (3.0)	1375 (0.1)	5892 (41.1)	64999 (5.0)	95104 (7.3)	167370 (12.8)
2007	65618 (5.0)	44576 (3.4)	1612 (0.1)	7553 (52.0)	89425 (6.8)	110194 (8.4)	208784 (15.9)
2008	78743 (6.0)	52011 (3.9)	1774 (0.1)	8494 (58.0)	116452 (8.8)	130754 (9.9)	257434 (19.5)
2009	90923 (6.9)	58905 (4.4)	2136 (0.2)	10002 (67.9)	144415 (10.9)	149828 (11.3)	306381 (23.1)
2010	100730 (7.6)	61784 (4.6)	2610 (0.2)	11347 (76.9)	182063 (13.6)	162514 (12.2)	358534 (26.9)
2011	107691 (8.0)	63985 (4.8)	2773 (0.2)	12042 (82.7)	208691 (15.6)	171676 (12.8)	395128 (29.5)
2012	106689 (8.0)	65285 (4.9)	3030 (0.2)	11007 (72.8)	224063 (16.6)	171974 (12.8)	410074 (30.4)
2013	98128 (7.3)	63976 (4.7)	3113 (0.2)	9600 (57.2)	232955 (17.2)	162104 (12.0)	406772 (30.0)
2014	86592 (6.4)	62200 (4.6)	3287 (0.2)	8116 (51.6)	258896 (19.1)	148792 (11.0)	419091 (30.9)
2015	73539 (5.4)	56137 (4.1)	3107 (0.2)	6157 (40.4)	295034 (21.7)	129676 (9.5)	433974 (31.9)
2016	59446 (4.4)	48941 (3.6)	3275 (0.2)	4552 (27.6)	322385 (23.7)	107987 (7.9)	438199 (32.2)

The total incidence of syphilis increased from 1.0 to 32.2 per 100 000 between 1995-2016

The reported incidence of primary or secondary syphilis grew slowly after 1995 and began declining after 2011.

Latent syphilis increased continuously and significantly increasing during the study period.

The reported incidence of congenital syphilis showed a major reversal: After rapidly increasing from 7.2 to 82.7 per 100 000 newborns during 2003-2011, the incidence rate sharply dropped to 27.6 per 100 000 newborns in 2016.

Limitation:

Unable to identify early latent syphilis cases

Data on syphilis screening coverage are also limited, leading to potential bias to the interpretation of diagnosed cases.

Data didn't report syphilis incidence by gender or subpopulation.

In the absence of data of direct medical investments on syphilis, our explanation of the association between syphilis and economy remains speculative

Syphilis epidemiology and public health interventions in Western Australia from 1991 to 2009

Kwan, Kellie S. H et al. "Syphilis Epidemiology and Public Health Interventions in Western Australia from 1991 to 2009." *Sexual Health* 9.3 (2012): 272-279.

Objectives:

Describe the epidemiology of congenital and infectious syphilis during 1991-2009

Examine the impact of public health interventions

Discuss the feasibility of syphilis elimination among Aboriginal people in Western Australia (WA).

Methods:

Analysed WA congenital and infectious syphilis notification data in 1991-2009 and national infectious syphilis notification data in 2005-2009 by Aboriginality, region of residence, and demographic and behavioural characteristics. Syphilis public health interventions in WA from 1991-2009 were also reviewed.

Results:

Table 1. Demographic characteristics of infectious syphilis notifications by Aboriginality, WA, 1991–2009
Oceania and Antarctica includes Australia, New Zealand, Melanesia, Micronesia, Polynesia (excluding Hawaii) and Antarctica

Demographic characteristic	Aboriginality				
	Aboriginal (N=874)		Non-Aboriginal (N=357)		
	n	%	n	%	
Age group (years)	Under 20	323	37.0	21	5.9
	20–29	377	43.1	77	21.6
	30–39	107	12.2	89	24.9
	40–49	44	5.0	87	24.4
	50+	17	1.9	82	23.0
Age range	11–72	–	14–72	–	
Median age	22.0	–	39.0	–	
Mean age	23.9	–	39.3	–	
Gender	Male	409	46.8	317	88.8
	Female	457	52.3	39	10.9
Region of residence	Metropolitan	65	7.4	314	88.0
	Rural	53	6.1	11	3.1
	Remote	741	84.8	30	8.4
Region of birth	Oceania and Antarctica	435	49.8	195	54.6
	Overseas	0	0.0	113	31.7
	Unknown	439	50.2	49	13.7
Where infection was acquired	WA	333	38.1	203	56.9
	Interstate	11	1.3	31	8.7
	Overseas	0	0.0	73	20.4
	Unknown	530	60.6	50	14.0

Congenital syphilis From 1991 to 2009: there were six notifications of congenital syphilis in WA.

From 1991 to 2005, 88% (n = 714 out of 813) of infectious syphilis notifications occurred among Aboriginal people, There were documented outbreaks among Aboriginal people in the Kimberley region in 1992 and in 2000–2004. The situation is reversed in 2006 and 2009, 62% (n = 258 out of 418) of infectious syphilis notifications occurred among non-Aboriginal people. An outbreak began in October 2006 in the metropolitan region among nonAboriginal men who have sex with men (MSM).

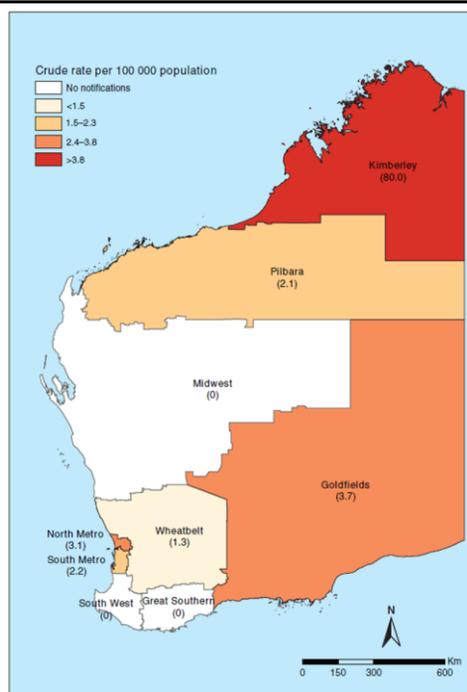


Fig. 2. Crude notification rate of infectious syphilis by public health unit regions, WA, 2009.

Public health intervention:

For aboriginal people:

annual syphilis screening, Opportunistic and antenatal testing, organised treatment and contact tracing. In the Kimberley region regular auditing of the clinical management pathway and STI screening rates in 15- to 35-year-olds to inform service delivery.

For non-Aboriginal MSM:

general practitioners, and sexual health and HIV clinic staff were alerted about the need to increase their level of clinical suspicion and offer opportunistic testing to MSM.

For migrant population:

provides voluntary infectious disease screening, treatment and follow-up for refugees and migrants arriving in WA under humanitarian resettlement schemes.

For other population:

syphilis serology testing for all women at their first antenatal visit, and for women at high risk of acquiring syphilis (including those in the Goldfields, Kimberley and Pilbara regions) to be retested in the third trimester and for women with positive syphilis serology in the first trimester to be retested in the third trimester or at delivery

Conclusion:

During 1991-2009, infectious syphilis in WA remained endemic among Aboriginal people in non-metropolitan areas. There were also sporadic outbreaks among migrant populations and the commencement of a sustained outbreak among non- Aboriginal MSM in the metropolitan area.

Despite this success and the implementation of enhanced infectious syphilis surveillance, the elimination of infectious syphilis has, to date, not been achieved in WA.

WA has the largest land area of any Australian state or territory, comprising over 2.5 million square kilometres, and the remote area encompasses more than 65% of this area. The vast inland area makes effective treatment and follow-up of cases an ongoing challenge. This is further exacerbated by the high mobility of Aboriginal people both within the remote area and across state and territory borders.

Miners and FIFO (fly in and fly out) workers are often considered high-risk groups for STIs. Increased overseas travel by FIFO workers, especially to countries where syphilis is endemic, combined with increased mixing of Aboriginal and non-Aboriginal sexual networks further reduce the likelihood of infectious syphilis elimination