The Christchurch Syphilis Outbreak

Edward Coughlan
Maureen Coshall
Catherine Parkes
• What happened
• What we did about it
• Where to from here
• Something old, something new, something borrowed, something blue
### Genito-Urinary Department

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*Note: Treatment entries are not clearly visible due to the quality of the image.*
What is happening - ESR

• Enhanced Surveillance of Infectious Syphilis at NZ Sexual Health Clinics started in Jan 2011

• Co-ordinated through AIDS Epidemiology Group and now ESR
  – Rebecca Psutka
  – Nigel Dickson
• The epidemiology of syphilis in New Zealand has undergone a series of evolutions in the last half century, and the rise in numbers seen in Christchurch in 2012 was associated with worrying new trends.

• In the 1990’s, places around the world were seeing an increase in the number of syphilis cases and were largely attributing the rise in numbers to crack cocaine use and those exchanging in drugs or money for sex, the outbreak in San Francisco at the time being no exception (1)
In the last decade, outbreaks of syphilis around the world in Canada, the US, Europe and Australia have disproportionately occurred amongst MSM, and those with HIV are more at risk. [2]

In the New Zealand data from 2002-2004 MSM comprised 45% of those infected - where infection was usually acquired in New Zealand.[3]
During 2007-2008 Auckland experienced a similar outbreak with the incidence rate reaching 7.0 per 100,000, and in Wellington there was also a rise on a slightly smaller scale with a rate of 5.9 per 100,000 of reported cases.

During these outbreaks there was a notable rise in the numbers of MSM who are being diagnosed with the disease, but it was felt at the time that cases were being underreported and the true extent of the problem wasn’t known.

Azariah, S Sexual Health, 2008. 5: p. 303-304
There have been several studies published in recent years about the epidemiology of syphilis in New Zealand.

A report from Auckland SHC found that in the period from January 2002 to September 2004 the number of people presenting there with infectious syphilis more than doubled.

Most of these people were men who have sex with men (MSM) and heterosexuals who had recently had sex overseas.

A retrospective audit from Wellington published in 2007 found that between 2004 and 2006 (the end of the study period) the city experienced an outbreak, again principally amongst MSM.

Cunningham R et al. An outbreak of infectious syphilis in Wellington, New Zealand NZMJ Vol 120 No 1260 24 August 2007
A prospective study over a 12 month period from July 2006 to July 2007 found, that based on Auckland laboratory data, there were 92 cases of infectious syphilis there, of which about half were among MSM. (3)

Enhanced surveillance of infectious syphilis in New Zealand sexual health clinics
Rebecca Psutka, Nigel Dickson, Sunita Azariah, Edward Coughlan, Jane Kennedy, Jane Morgan and Nicky Perkins

*Int J STD AIDS* 2013 24: 791 originally published online 15 July 2013
DOI: 10.1177/0956462413483251

The online version of this article can be found at:
http://std.sagepub.com/content/24/10/791
Abstract
Following a rise in cases of infectious syphilis in New Zealand, national enhanced surveillance at sexual health clinics was initiated. All public sexual health clinics reported monthly on the number of cases seen, and completed a coded questionnaire on each case. Monthly reports to routine surveillance were compared and discrepancies reconciled. During 2011, 72 cases of infectious syphilis were reported. The majority (83%) were among men who have sex with men who were mainly infected in New Zealand and had an ethnic profile similar to all New Zealanders. Most heterosexual infections occurred overseas, among people of non-European non-Maori ethnicity. About half the cases had symptoms on presentation. Overall, 18% of men who have sex with men were HIV positive. Resurgent syphilis in New Zealand disproportionately affects men who have sex with men, amongst whom HIV is prevalent. Men who have sex with men should be aware of the risks and symptoms of syphilis and encouraged to have regular sexual health checks including serology testing. Control of syphilis should be included in the strategy to check HIV spread. Syphilis serology should continue to be part of routine immigration and antenatal screening, and where clinically indicated. Enhanced surveillance was easily initiated for an uncommon condition seen at sexual health clinics, and provided valuable information.

Keywords
Syphilis (*Treponema pallidum*), bacterial disease, epidemiology, surveillance, New Zealand, men who have sex with men

Date received: 29 October 2012; accepted: 27 February 2013
Christchurch 2012

• An increase in early infectious syphilis (primary, secondary, early latent or RPR $\geq 1:32$) from 8 cases to 26

• A change from average age of 46 to 26 years
All Male

24/26 = MSM

Of MSM – 2 had female contacts as well

Age:
  - Range 19 - 48 years
  - Median was 24y
• Ethnicity:
  – NZ European 20
  – Maori 5
  – Other 1
• **Place Of Infection:**
  - NZ 24
  - Overseas 1
  - Unknown 1

• **Reason for Testing:**
  - Clinical symptoms/suspicion 15
  - Syphilis Contact 6
  - Clinical symptoms and contact 2
  - Asymptomatic screening 2
  - Immigration 1
• Concurrent Infection:
  – HIV 2
  – Chlamydia 9
  – HSV 1
### Male partner in past 3 month (MSM)

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<td>1</td>
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### Site

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### Initial test site

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<td>GP</td>
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<td>Outreach</td>
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<td>SHC</td>
<td>8</td>
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<td>Student Health</td>
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The public health response to the re-emergence of syphilis in Wales, UK

D Rh Thomas PhD*, K F Cann MSc*, M R Evans FFPH*, J Roderick RGN†, M Browning MRCP†, H D L Birley FRCP†, W Curley MA‡, P Clark‡, G Northey MPH*, S Caple MPH§ and M Lyons FFPH§

*Public Health Wales Communicable Disease Surveillance Centre, Cardiff; †Department of Genitourinary Medicine, Cardiff and Vale Local Health Board, Cardiff; ‡Terrence Higgins Trust Cymru, Cardiff; §Public Health Wales Health Protection Services, Cardiff, UK

Summary: During the 1990s, cases of infectious syphilis were uncommon in Wales. In 2002, an outbreak occurred in a sexual network of men who have sex with men (MSM) attending a sauna. A multidisciplinary outbreak control team was convened to raise awareness of the outbreak among MSM and health professionals, assess the extent of outbreak, and initiate surveillance measures. It is likely that early intensive control efforts dampened the epidemic curve. However, since 2006 the number of cases has increased steadily to a peak of four cases per 100,000 population in 2008. The majority of cases continue to occur in MSM (81% in 2009) and in those attending genitourinary (GU) medicine clinics in south east Wales (76%). Traditional sexual networks such as saunas, bars/clubs and cruising grounds remain frequently reported, but Internet-based networks are assuming increasing importance. Public health interventions have been sustained, using traditional partner notification, health promotion initiatives, and more innovative Internet network tracing methods.

Keywords: syphilis, disease outbreak, population surveillance, incidence, sexual behavior, steam bath, Wales, MSM
An outbreak control team was convened in October 2002 comprising physicians and health advisers from Cardiff GU medicine clinic, outreach and health promotion specialists, health protection specialists and epidemiologists. The outbreak team had four objectives: (i) to raise awareness of the outbreak among local primary care services and the gay community in south Wales; (ii) to provide outreach testing; (iii) to develop an enhanced surveillance scheme for syphilis across Wales, and; (iv) to carry out surveillance of risk behavior in the sexual network associated with the sauna.
# GUIDANCE FOR MANAGING STI OUTBREAKS & INCIDENTS

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<td><strong>Document approved date:</strong></td>
<td>3rd November 2010</td>
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<td><strong>Document review date:</strong></td>
<td>Within 12 months of document approval date</td>
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<tr>
<td><strong>Authors:</strong></td>
<td>Torshie Annan, Gwenda Hughes, Barry Evans, Ian Simms, Cathy Ison, Sam Bracebridge, Roberto Vivancos</td>
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<td><strong>Reviewed by:</strong></td>
<td>HPA Local and Regional Services, Sexual Health Leads, the British Association for Sexual Health and HIV (BASHH), and the British HIV Association (BHIVA)</td>
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<td><strong>Approved by:</strong></td>
<td>HPA Sexual Health Programme Board</td>
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2.2 Infection characteristics

STIs have particular features which make them distinct from other infectious diseases and need to be taken into consideration when planning intervention and control strategies. For example, they are often associated with social stigma, and confidentiality concerns for patient’s identity may restrict the availability of GUM clinic held data. Treatment of the index patient and identification and treatment of their sexual contact(s) is important to prevent re-infection and onward transmission. Sustained behavioural change may be required to reduce the incidence among vulnerable sexual networks. STI epidemiology is dependent on sexual network structure and consequently outbreaks may develop over several months.

2.3 Outbreak investigation

The basic principles of STI outbreak investigation are the same as those for any outbreak of infection. However, particular features of STI outbreaks require more specific arrangements for their investigation and control. These include:-

2.3.1 Identification Identification and initial investigation of outbreaks can be made by the local GUM physician, the CCDC, Microbiologist, RE, or through routine surveillance (i.e. laboratory or GUMCAD) exceedance reporting. Typically a health care professional would recognise an
2.3.2 Multi-disciplinary approach The nature of STI outbreaks is such that a range of professionals should be involved in their investigation. Of critical importance is involvement of physicians and sexual health advisers at GUM clinics as well as public health professionals, PCT sexual health leads and STI epidemiologists.

2.3.3 Tailoring interventions Interventions used to control STI outbreaks will depend on the disease and the population affected. It is unlikely that a published evidence-base will be available to the OCT with which to provide specific guidance at the local level. This emphasises the role of experts within the OCT to formulate a effective, bespoke action plan. However, in general the identification of sexual contacts and sexual networks will be crucial to effective intervention. Health promotion may need to be targeted to specific sub-populations or more widely, and will need to include primary and secondary prevention strategies (section 5.2.4).

2.3.4 Time-scales The timeframe within which STI outbreaks will be investigated and controlled will usually be significantly greater than for other outbreaks of infection.
3.3 Contingency planning

Develop a locally adapted plan which should identify financial resources/contingency funds that may be called upon should financial help be needed in supporting disease control interventions (e.g. health promotion, additional GUM services and outreach work). This would normally be the responsibility of the PCT to fund and it is another reason why it is important to involve the sexual health lead from the local PCT early in the course of an incident/outbreak.

Table 2  Summary of key roles & responsibilities in managing STI outbreaks

<table>
<thead>
<tr>
<th>Professional</th>
<th>Responsibilities</th>
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<tr>
<td>STI Outbreak Control Team (OCT) Chair</td>
<td>• The person taking responsibility for OCT chair would be decided at the group's first meeting, but usually it would be either the DPH or CCDC.</td>
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<td>• Direct and co-ordinate overall management of outbreak.</td>
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<td>• Ensure each member of the control group understands his/her role.</td>
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<td>• Be available throughout the episode for consultation and advice.</td>
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<td>• Be responsible for liaison between senior staff and clinicians and ensure timely communication between members of the OCT and other parties.</td>
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<td>• OCT has responsibility for declaring the incident over.</td>
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<td>• Ensure that an incident report is written and that lessons learned are disseminated.</td>
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<td>CCDC / CHP (or Unit Sexual Health Lead depending on local arrangements)</td>
<td>• Identification of outbreaks through routine surveillance.</td>
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<td>• Provide local epidemiological support.</td>
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<td>• Highlight priority to the commissioning authority and advocate if necessary for additional resources to deal with outbreak.</td>
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<td>• Maintain heightened surveillance of the infection to evaluate the effectiveness of interventions.</td>
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<td>• Audit management of local outbreaks in conjunction with GUM/RE.</td>
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<td>• Develop materials for training purposes from lessons learnt (outbreak)</td>
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<td>• Provide guidance on the overlap between public health and GUM</td>
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<tr>
<td>Role</td>
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| HPA Colindale                   | • Provide guidance on whether the observed increase was an outbreak or could be explained in terms of other factors.  
• Provide information resources to advise on incident management.  
• Provide advice on local research studies that may be undertaken.  
• Assist in development of investigative tools.  
• Occasionally, provide personnel to assist with field investigation or analysis of results.  
• Development of methods to evaluate control measures.  
• Advice and specialist microbiological investigation. |
| GUM Physician                    | • Early identification of increasing STIs and communication to CCDCs.  
• Facilitate confirmation of outbreaks through focused studies.  
• Appraise capacity of local GUM services to respond to STI outbreak.  
• Identify and help implement locally appropriate and acceptable control measures in conjunction with OCT. |
| NHS Consultant Microbiologist and/or HPA Consultant Microbiologist (regional or national) | • Identify outbreaks through routine surveillance.  
• Provide expert advice to OCT on interpretation of microbiological data, investigative methods, collection of specimens and outbreak control methods.  
• Provide expert advice on use of specialist diagnostic methods.  
• Arrange prompt analysis and reporting of clinical samples.  
• Arrange further testing at appropriate reference laboratories (see HPA Colindale above). |
| Regional Epidemiologists (or Regional Sexual Health Lead depending on local arrangements) | • Identify possible regional outbreaks through routine surveillance.  
• Epidemiological expertise and support with the investigation and control of the outbreak.  
• Keep HPA Regional Director informed and seek their support as/when required.  
• Assistance with auditing incidents.  
• Support with the development of training exercises. |
Community and Public Health Meeting 16/8/12 – Minutes and Action Points

Topic: Infectious Syphilis Cases in Christchurch

Present:
Dr Ramon Pink – Medical Officer of Health
Chris Woods – Team Leader Community and Public Health
Rebecca Psutka – Otago University Epidemiology Fellow
Akira Le Fevre – NZ AIDS Foundation
Dr Edward Coughlan – Christchurch Sexual Health
Dr Heather Young – Christchurch Sexual Health
Maureen Coshall – Health Advisor Christchurch Sexual Health
Specific action plans:

1. Rebecca to generate a preliminary report of her presentation
2. Dr Young to generate meeting minutes, co-ordinate key points regarding syphilis action points and liaise with Maureen Coshall and Akira regarding NZAF press release
3. Dr Coughlan to contact CDHB Communications
4. Dr Pink to email all General Practitioners alerting them to the existence of the syphilis epidemic and/or add specific data
5. The GP PHO liason newsletter to contain an alert regarding syphilis
6. Dr Pink to liaise with Dr Coughlan regarding the Grand Round having a joint presence with Public Health

7. Dr Coughlan and Dr Pink to discuss with Professor Les Toop (General Practice) to co-ordinate awareness, teaching and decision making around Sexual Health and Primary Care
8. To contact other Primary Care “champions”
9. Dr Young to compile an email list

There is to be an update meeting in 2 months including Associate Professor Nigel Dickson +/- other interested parties, including Primary Care
Response actions included:

1. Interview in the Press, 25/08/12, resulted in a front page article: *Phone app link to gay syphilis epidemic*.
2. Repeated on stuff.co.nz on
3. Separate article published in the gay press Express magazine
5. GP PHO Liason newsletter facilitated by Professor Les Toop
6. NZDoctor article on Syphilis
7. NZSHS Executive informed of the epidemic and actions taken
8. Presentation at the Clinical Grand Round Christchurch Hospital
9. Presentation at the George Abbott Symposium (Paediatric and Adolescent forum)
10. Health Pathways update
11. Perinatal morbidity and mortality notification
12. College of Midwives informed of the outbreak
13. Presentation to Canterbury Dental Association
14. Facebook advertisement with >500 hits, resulting in testing and identification of a new case to date
15. MSM invitation to those who have >3 contacts in last 3 m and not screened in last 3 m
Syphilis ‘back with a vengeance’

Homosexual hookups easy with iPhone apps

Alarming trend

People can access sexual partners with the greatest freedom they have ever had now.

Dr. Michael Young, a consultant public health physician at Royal Prince Alfred Hospital, Sydney, says syphilis is on the rise.

'Anybody can use social media sites or smartphone apps to search for sexual partners. The applications market now demand 'sexually explicit' content. You can find it. People pop up on social media sites with no business address or no contact details,' Dr Young said.

Young said sex workers on the street still had sex with isolated people, but the internet now allowed them to find people they did not know, and it made it easier to do it.

The consultation rate and the number of people consulting clinics has increased by 20 percent in the last three years. The rate of new cases of syphilis in New South Wales has almost doubled in the last five years, with more than 500 new cases in Sydney alone last year. The increase is due to the rise in reported cases of syphilis, which is a sexually transmitted infection.

Dr Young said he had seen the number of new cases of syphilis rise in recent years and the increase was not due to better reporting.

'Instead, it’s due to more people consulting clinics, which means that people are consulting for the disease, not just the infection,' he said.

'We have seen a significant increase in the number of people consulting clinics for syphilis and that’s not just because of better reporting. It’s because more people are consulting clinics and are being diagnosed. The increase is not due to more people consulting clinics, it’s due to more people consulting clinics for the disease, not just the infection,' he said.

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The Use of Social Media for Christchurch Syphilis Outbreak

Catherine Parkes - BN., RCpN., PGDip HSc (Nursing)
Charge Nurse Manager – Christchurch Sexual Health Centre
We needed to reach the biggest possible target group
  • Initially thought mass email

Looked at NZAF ‘get it on’ campaign
  • How do we do this?

Contacted and met with NZAF who suggested Facebook advertising

Gain approval for this and a budget
  • Budget approved for $1500
• Needed to have an ‘appealing’ image.
• Eye catching heading
• Brief but informative straight to the point blurb
• Link to more information
Target population

- **Men**
- **Aged between 16 yrs and no cut off age**
- **Lives within 80 km of Christchurch**
- **Who like ..................**

**Audience**

- 58,300 people
- who live in New Zealand
- who live within 80 kilometres of Christchurch
- who like #The New Joy of Gay Sex, #Bisexuality, #The Ellen DeGeneres Show, #David Beckham, #Taylor Swift, #LGBT rights by country or territory, #Corbin Fisher, #Gay pride, #HIV, #Justin Bieber, #Lady Gaga, #David Bowie, #Gucci, #Adele (singer), #Homosexuality, #George Michael, #Australian Marriage Equality, #Miley Cyrus, #Will & Grace, #Alicia Keys, #Britney Spears, #Finn Hudson, #Queer, #Prada, #Kesha, #Dannii Minogue, #Kylie Minogue, #Christina Aguilera, #Chanel, #Closeted, #Marriage Equality USA, #Manhunt.net, #LGBT, #Gay, #Selena Gomez, #Louis Vuitton, #Transgender, #Katy Perry, #Ellen DeGeneres, #Dolce & Gabbana, #Vogue (magazine), #Same-sex marriage, #Rihanna or #Sydney Mardi Gras
Health Info Website

- Links into CDHB Health info website.
- Printable
- Easy to search
- Basic info
Syphilis: The Facts

What is syphilis?
Syphilis is a sexually transmitted infection caused by a bacteria (bug) called treponema pallidum. This bacteria enters the body through tiny breaks in the skin, mainly in the anal area, genital area, or the mouth.

Important! There has been a sudden increase in syphilis in New Zealand in the last few years. Initially it was mostly seen in homosexual men but is now occurring in heterosexual men and women. It is very important to get checked out if you have any new genital sores or if you think you may be at risk.
Results

- 948 clicks onto the syphilis fact sheet.
- 67 – 80% of the target population were within the 18 – 24 year age group
- 3 presentations to the clinic who directly associated their appointment with the facebook add.
- Total cost for the 6 month time frame $803.28
Minister of Health’s visit to CDHB Sexual Health Centre

Tony Ryall, Minister of Health, made a special visit to the CDHB Sexual Health Centre on Thursday following interest from a recent story in The Press.

The purpose of the Minister’s visit was an opportunity for him to hear about emerging health issues in Canterbury.

Dr Coughlan says the team were very grateful to the Minister for taking the time to meet them and hear about some of the issues facing our communities.

“Minister Ryall showed a lot of interest in what the team had to say and seemed very impressed with our enthusiasm and commitment in providing an excellent service to the people of Canterbury,” Dr Coughlan says.

“It was a really positive meeting. We believe Sexual Health often goes under the radar, as there is still a lot of stigma associated with it. Having the Minister come and listen to what we think needs to be done to improve health outcomes was incredibly encouraging and we look forward to seeing what comes out of it.”
Hnr Tony Ryall, Health Minister, Cathie Parkes, Sexual Health Centre Charge Nurse Manager, Dr Edward Coughlan, Sexual Health Centre Clinical Director, Dr Heather Young, Sexual Health Centre Physician, Margaret Knowles receptionist, Dr Ramon Pink, Canterbury Medical Officer of Health, Maureen Coshall, Sexual Health Centre Nurse Specialist, Sue Teague, Sexual Health Centre Service Manager
“New and Borrowed”

Heard of Tpr K ???
“new” and “borrowed”

“Borrowed “from Sheila Lukehart STI World Congress 2013
Local immune response

- T pallidum
- T lymphocytes
- B lymphocytes
- Macrophage
- Activated macrophage
- Interferon γ
- B lymphocyte activating signals
- Plasma cells
- Antibodies
Clearance of *T. pallidum* from Early Lesions
• Primary lesion heals with local host response

• BUT secondary syphilis follows with chronic infection

• Evasion of the immune response
• “Stealth “ pathogen – low concentrations of integral membrane proteins

• Antigenic variation changing the antigens exposed to immune response
  - Phase variation : ON - OFF
  - On but changed in variation
TprK

- Translocated Promoter Region
- This gene is highly expressed and located in outer membrane
- Induces robust early immune response
- Sequences variable in 7 discrete regions
- \( \Rightarrow \) Immune evasion & re-infection
Infect with clonal treponemes

treponemes expressing target TprK are killed

antibodies to TprK V regions
Rcombination occurs to form TprK variant

Antigenic variants are selected

TprK Immune Selection
PCR testing

- A PCR based test for lesions eg suspected chancres will soon be available through Canterbury Health Laboratories.
Where to From Here?

• Likely to occur elsewhere
• Will there be a shift into heterosexual population?
• Need to keep screening in high risk populations
• Need for National Co-ordination aligned with operational National Health Strategy
Summary

• In 2012 CHCH experienced an infectious syphilis outbreak with 26 cases and so far 13 in 2103
• A range of response activities instigated
• This is not over for NZ
• Demonstrated the value of an Enhanced Syphilis Surveillance programme
• Need for National Co-ordination
Acknowledgements

Dr Katharine Adams CDHB.

Rebecca Psutka, Otago AIDS Epidemiology Group

Dr Heather Young – Christchurch Sexual Health

Dr Karyn Johnson, CDHB GPLiaison

Akira Lefevre and others - New Zealand AIDS Foundation

Ass Prof Nigel Dickson, Otago AIDS Epidemiology Group

Prof Les Toop, Department General Practice and Public Health, Otago University, Christchurch

Dr Peter Saxton, Otago AIDS Epidemiology Group