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**Laboratory Surveillance of
Chlamydia and Gonorrhoea
in New Zealand**

January to March 2011

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by

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**This report is available on the Internet at www.surv.esr.cri.nz
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Introduction

The cornerstone of communicable disease surveillance in New Zealand is statutorily-mandated disease notification. However, with the exception of acquired immune deficiency syndrome, the late sequelae of human immunodeficiency virus infection and hepatitis B, sexually transmitted infections (STIs) are not notifiable. Therefore surveillance efforts are based on voluntary provision of microbiologic data from diagnostic laboratories and of clinic-based data from sexual health clinics (SHCs), family planning clinics (FPCs) and student and youth health clinics (SYHCs). Population and disease coverage varies by data source.

Laboratory surveillance of gonorrhoea began in the Auckland, Waikato and Bay of Plenty regions in 1998. Laboratory surveillance of chlamydia began in the Waikato and Bay of Plenty regions in 1998 and in the Auckland region in 2001. Since June 2004, efforts have been made to extend STI surveillance to additional laboratories across New Zealand. Improvements to the reporting of laboratory surveillance data were implemented during 2009. Population-based rates of chlamydia and gonorrhoea for many District Health Boards (DHBs) and estimates of national rates based on the data from these DHBs are now being reported. This is the first time since STI surveillance began that population estimates of chlamydia and gonorrhoea incidence have been produced.

In addition to laboratory surveillance, clinic-based surveillance of STIs has traditionally been based on data from specialist SHCs. Since 1998, clinic-based STI surveillance has been progressively expanded to include data from FPCs and SYHCs to provide a more comprehensive picture of the disease burden in New Zealand. At present, data from SHCs provide the most comprehensive information on the epidemiology of STIs in New Zealand. This is for a number of reasons including the stability of both the number of SHCs across New Zealand, number of SHCs participating in the surveillance programme, and the availability of ethnicity data. Quarterly reports for clinic-based STI surveillance are produced separately and are available at www.surv.esr.cri.nz.

The number of cases of STIs reported through the clinic-based surveillance system underestimates the true burden of STIs in New Zealand because a substantial percentage of STIs are diagnosed by other health care providers, particularly primary health care practitioners. Laboratories receive specimens from all health providers, and so, provide a useful, complementary source of STI data. For example, in areas where both clinic and laboratory surveillance data are collected, laboratory data aggregated across New Zealand in 2010 reported approximately four times the number of chlamydia and three times the number of gonorrhoea cases compared with that reported by clinic-based surveillance.

This report presents data on chlamydia and gonorrhoea cases reported in the first quarter (January to March) 2011 from 40 laboratories across New Zealand.

Methods

All results and analyses are based on data submitted prior to 6 May 2011. Any data submitted after this date are not included in this report due to time constraints. All results are provisional.

Data collection

The participating laboratories (see Appendices A and B) report anonymised data on laboratory-confirmed cases of chlamydia and gonorrhoea, by age and sex, as well as the total number of specimens and/or patients tested. Laboratories only report on specimens received directly from health care settings within their own region. They do not report on specimens that were subcontracted to their laboratory from outside their region. Diagnostic tests used for chlamydia are not standardised. Some laboratories use nucleic acid amplification and others use an enzyme immunoassay. These tests have different sensitivities and specificities that may influence the data.

With current laboratory data and reporting practices it is not possible to determine the total number of positive individuals and specimens. An attempt has been made to remove duplicates from the data where one patient may have multiple positive specimens. If this was not possible, it was assumed that each test-positive specimen was equivalent to one test-positive patient. As a patient may have more than one specimen tested for each STI episode, the true incidence may be less than that reported here.

Each month laboratories send data to ESR, where the data are entered into a database by ESR staff.

Analysis methods

Laboratory STI surveillance data are stored in a database and was extracted and analysed using Microsoft Access and Microsoft Excel.

Calculation of rates

Population-based disease rates for the quarter were calculated by dividing the total number of test-positive reported cases for chlamydia or gonorrhoea by the total population for each DHB and multiplying by four to provide an annualised rate. Population data are 2010 mid-year population estimates published by Statistics New Zealand.

Where a community laboratory carried out testing for more than one DHB, these DHBs have been combined for reporting purposes, these are, Auckland, Waitemata, and Counties Manukau DHBs (Labtests), and Hutt Valley and Capital & Coast DHBs (Aotea Pathology).

Rates were not calculated where there were fewer than five cases in any category. Rates calculated from fewer than five cases are unstable and are not suitable for comparisons. Care should also be exercised when interpreting and comparing rates based on fewer than 20 cases. Readers should also be advised to consider the absolute

number of cases in the categories analysed by rate. This is because categories with the highest rates may sometimes involve a relatively small proportion of the overall disease burden.

Data completeness

Laboratory participation

In the first quarter (January to March) 2011, 40 laboratories across 18 DHBs in New Zealand participated in the STI surveillance programme.

Chlamydia data were provided by 39 laboratories. All 39 laboratories submitted chlamydia data by the date required for all three months of the first quarter (January to March) 2011.

Gonorrhoea data were provided by 38 laboratories. All 38 laboratories submitted gonorrhoea data by the date required for all three months of the first quarter (January to March) 2011.

Selection criteria for DHB reporting

For a DHB to be included in the analysis, all laboratories servicing that DHB must have participated in the surveillance programme (unless the non-participating laboratory(ies) was a hospital laboratory undertaking a small proportion of the DHB's STI testing). In addition, each laboratory in the DHB must have provided data for all three months of the quarter. Table 1 shows the DHBs that met the selection criteria for reporting for the first quarter (January to March) 2011.

Table 1. Selected/excluded DHBs for reporting, January to March 2011

District Health Board	Chlamydia	Gonorrhoea
Northland	✓	✓
Auckland region	✓	✓
Waikato	✓	✓
Lakes	✓	✓
Bay of Plenty	✓	✓
Tairāwhiti	✓	✓
Taranaki	✓	✓
Hawke's Bay	✓	✓
Whanganui	✓	✓
MidCentral	✓	✓
Wairarapa	✓	✓
Wellington region	x	✓
Nelson Marlborough	x	x
West Coast	✓	✓
Canterbury	x	x
South Canterbury	x	x
Southern	✓	✓

Auckland region: Waitemata, Auckland, and Counties Manukau DHBs

Wellington region: Hutt Valley and Capital & Coast DHBs

✓ = Selected x = Excluded

Chlamydia Reporting – January to March 2011

In the first quarter (January to March) 2011, 35 laboratories from 15 DHBs met the selection criteria for chlamydia reporting. Laboratories in these DHBs tested 74 143 specimens for chlamydia, of which 7064 (9.5%) specimens tested positive from 6861 patients. Table 2 presents the percentage of specimens tested for chlamydia that were positive, the number of test-positive chlamydia cases, and the annualised chlamydia population rates by DHB and sex.

The national annualised chlamydia rate, based on 15 DHBs, was 850 per 100 000 population (6861 cases). The highest DHB rate of chlamydia was reported for Tairāwhiti DHB (1829 per 100 000 population, 212 cases) followed by Lakes DHB (1264 per 100 000 population, 329 cases). Annualised chlamydia population rates by DHB are shown in Figure 1.

Sex was recorded for 99.8% (6850/6861) of chlamydia cases. The national annualised chlamydia rate for females (1246 per 100 000 population, 5121 cases) was almost three times the national annualised rate for males (436 per 100 000 population, 1729 cases).

Age was recorded for 98.8% (6778/6861) of chlamydia cases. Of these, 72.5% (4912 cases) were aged 15–24 years. The highest national age-specific annualised rate of chlamydia in males occurred in the 20–24 years age group (2198 per 100 000 population, 651 cases) and for females in the 15–19 years age group (6852 per 100 000 population, 2015 cases).

Thirty-five (14 male, 21 female) cases of chlamydia were reported for the less than one year age group. Annualised rates by DHB could not be calculated separately for this age group, as estimated population data were not available.

Table 3 presents the number of test-positive chlamydia cases and annualised chlamydia population rates by DHB and age group.

Table 2. Percentage of specimens tested that were positive for chlamydia, number of test-positive chlamydia cases, and annualised chlamydia population rates by DHB and sex, January to March 2011

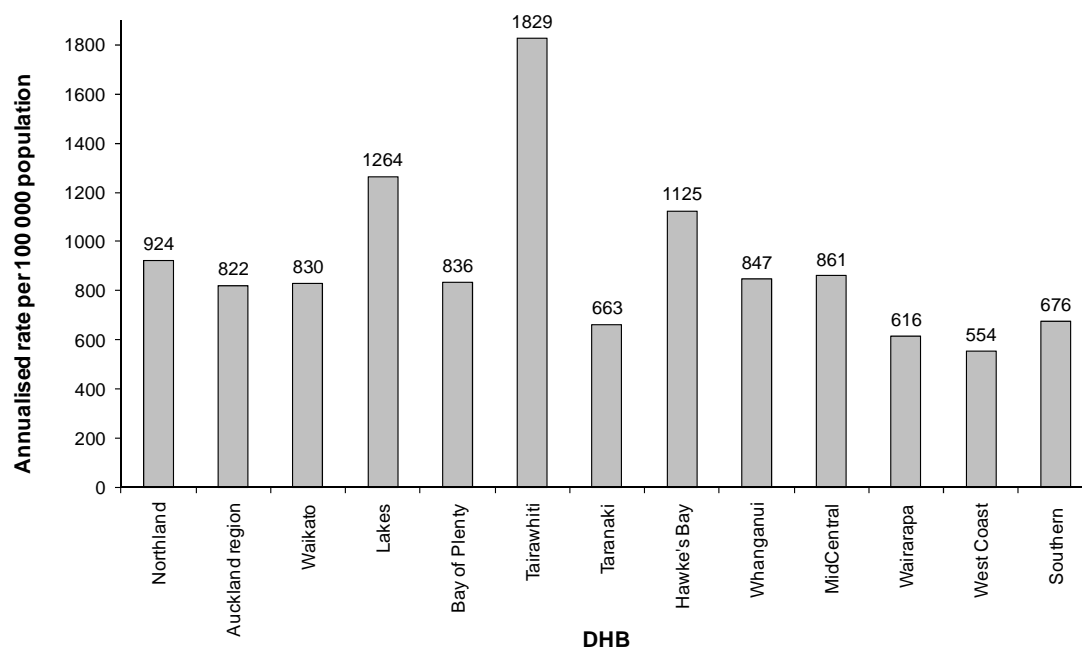
District Health Board	Specimens tested positive (%)	Number of test-positive cases				Annualised rate per 100 000 population		
		Male	Female	Unknown	Total	Male	Female	Total
Northland	11.9	72	290	1	363	372	1452	924
Auckland region ¹	8.5	795	2238	3	3036	438	1190	822
Waikato	10.2	188	568	0	756	420	1227	830
Lakes	11.6	64	264	1	329	500	1994	1264
Bay of Plenty	9.9	95	339	5	439	371	1260	836
Tairāwhiti	17.3	51	161	0	212	903	2709	1829
Taranaki	8.6	58	123	0	181	430	891	663
Hawke's Bay	13.2	115	320	0	435	611	1614	1125
Whanganui	12.9	28	103	0	131	370	1301	847
MidCentral	12.8	110	249	1	360	540	1160	861
Wairarapa	12.5	15	47	0	62	305	912	616
West Coast	8.6	13	32	0	45	314	803	554
Southern	7.3	125	387	0	512	334	1011	676
Other ²	8.4	128	213	0	341	–	–	–
Total ³	9.5	1729	5121	11	6861	436	1246	850

¹Auckland region: Waitemata, Auckland, and Counties Manukau DHBs

²Data from other DHBs where selection criteria were not met

³Total number and denominator for annualised rate calculations only includes DHBs meeting the selection criteria

Figure 1. Annualised chlamydia population rate by DHB, January to March 2011



Auckland region: Waitemata, Auckland, and Counties Manukau DHBs

Table 3. Number of test-positive chlamydia cases and annualised chlamydia population rates by DHB and age group, January to March 2011

Age group (years)	0–4		5–9		10–14		15–19		20–24		25–29		30–34		35–39		40+		Unknown		Total	
District Health Board	Cases	Rate per 100 000	Cases	Rate per 100 000	Cases	Rate per 100 000	Cases	Rate per 100 000	Cases	Rate per 100 000	Cases	Rate per 100 000	Cases	Rate per 100 000	Cases	Rate per 100 000	Cases	Rate per 100 000	Cases	Rate per 100 000	Cases	Rate per 100 000
Northland	1	–	2	–	11	372	191	6886	105	4932	21	1207	15	815	8	344	9	45	0	–	363	924
Auckland region ¹	23	83	0	–	45	178	921	3312	1153	4012	411	1418	242	935	106	387	134	88	1	–	3036	822
Waikato	4	–	0	–	13	197	280	4016	273	4200	88	1542	54	1027	22	376	22	54	0	–	756	830
Lakes	1	–	0	–	15	749	155	8174	88	5432	39	2667	17	1137	8	464	6	51	0	–	329	1264
Bay of Plenty	0	–	0	–	19	504	144	3908	176	6162	53	1982	25	908	12	365	5	19	5	–	439	836
Tairāwhiti	0	–	0	–	10	1053	87	9680	69	9517	23	3608	13	2131	5	679	5	98	0	–	212	1829
Taranaki	1	–	0	–	0	–	49	2541	43	2626	17	1128	8	535	1	–	2	–	60	–	181	663
Hawke's Bay	1	–	1	–	12	410	201	7214	145	6499	44	2251	18	886	5	203	8	43	0	–	435	1125
Whanganui	0	–	0	–	1	–	53	4680	33	3380	18	2308	7	966	2	–	0	–	17	–	131	847
MidCentral	1	–	0	–	5	173	133	3987	131	3968	52	2047	23	1033	5	194	10	52	0	–	360	861
Wairarapa	0	–	0	–	1	–	32	4858	20	4010	3	–	3	–	1	–	2	–	0	–	62	616
West Coast	2	–	0	–	0	–	12	2177	20	4720	6	1505	1	–	3	–	1	–	0	–	45	554
Southern	2	–	0	–	3	–	215	3633	183	2869	56	1140	30	679	11	225	12	34	0	–	512	676
Other ²	2	–	0	–	4	–	104	–	110	–	52	–	32	–	17	–	16	–	4	–	341	–
Total ³	36	61	3	–	135	241	2473	4098	2439	4204	831	1546	456	919	189	343	216	60	83	–	6861	850

¹ Auckland region: Waitemata, Auckland, and Counties Manukau DHBs

² Data from other DHBs where selection criteria was not met

³ Total number and denominator for annualised rate calculations only includes DHBs meeting the selection criteria

Gonorrhoea Reporting – January to March 2011

In the first quarter (January to March) 2011, 35 laboratories from 17 DHBs met the selection criteria for gonorrhoea reporting. Laboratories in these DHBs tested 86 962 specimens for gonorrhoea, of which 777 (0.9%) specimens tested positive from 660 patients. Table 4 presents the percentage of specimens tested for gonorrhoea that were positive, the number of test-positive gonorrhoea cases, and the annualised gonorrhoea population rates by DHB and sex.

The national annualised gonorrhoea rate, based on 17 DHBs, was 72 per 100 000 population (660 cases). The highest DHB rate of gonorrhoea was reported for Tairāwhiti DHB (474 per 100 000 population, 55 cases) followed by Hawke's Bay DHB (91 per 100 000 population, 35 cases). Annualised gonorrhoea population rates by DHB are shown in Figure 2.

Sex was recorded for 99.4% (656/660) of the gonorrhoea cases. The national annualised gonorrhoea rate for males (86 per 100 000 population, 387 cases) was one and a half times higher than the national annualised rate for females (58 per 100 000 population, 269 cases).

Age was recorded for all of the gonorrhoea cases. Of these, 44.5% (294 cases) were aged 15–24 years. The highest national age-specific annualised rate of gonorrhoea in males occurred in the 20–24 years age group (282 per 100 000 population, 96 cases) and for females also in the 20–24 years age group (289 per 100 000 population, 95 cases).

One case of gonorrhoea was reported for the less than one year age group. Annualised rates by DHB could not be calculated separately for this age group, as estimated population data were not available.

Table 5 presents the number of test-positive gonorrhoea cases and annualised population rates of gonorrhoea by age group.

Table 4. Percentage of specimens tested that were positive for gonorrhoea, number of test-positive gonorrhoea cases, and annualised gonorrhoea population rates by DHB and sex, January to March 2011

District Health Board	Specimens tested positive (%)	Number of test-positive cases				Annualised rate per 100 000 population		
		Male	Female	Unknown	Total	Male	Female	Total
Northland	0.7	12	13	0	25	62	65	64
Auckland region ¹	0.7	165	101	1	267	93	55	72
Waikato	1.1	48	26	0	74	108	57	81
Lakes	0.9	11	7	0	18	87	53	69
Bay of Plenty	1.3	26	14	0	40	103	53	76
Tairāwhiti	5.3	28	27	0	55	499	457	474
Taranaki	0.6	3	7	0	10	22	51	37
Hawke's Bay	3.7	18	17	0	35	96	87	91
Whanganui	1.6	8	1	0	9	105	13	58
MidCentral	1.5	15	18	1	34	74	85	81
Wellington region ²	1.0	38	24	0	62	73	44	57
Wairarapa	1.0	3	1	0	4	62	20	–
West Coast	0.8	2	3	0	5	48	75	62
Southern	0.7	10	10	2	22	27	26	29
Other ³	0.7	11	10	1	22	–	–	–
Total ⁴	0.9	387	269	4	660	87	58	72

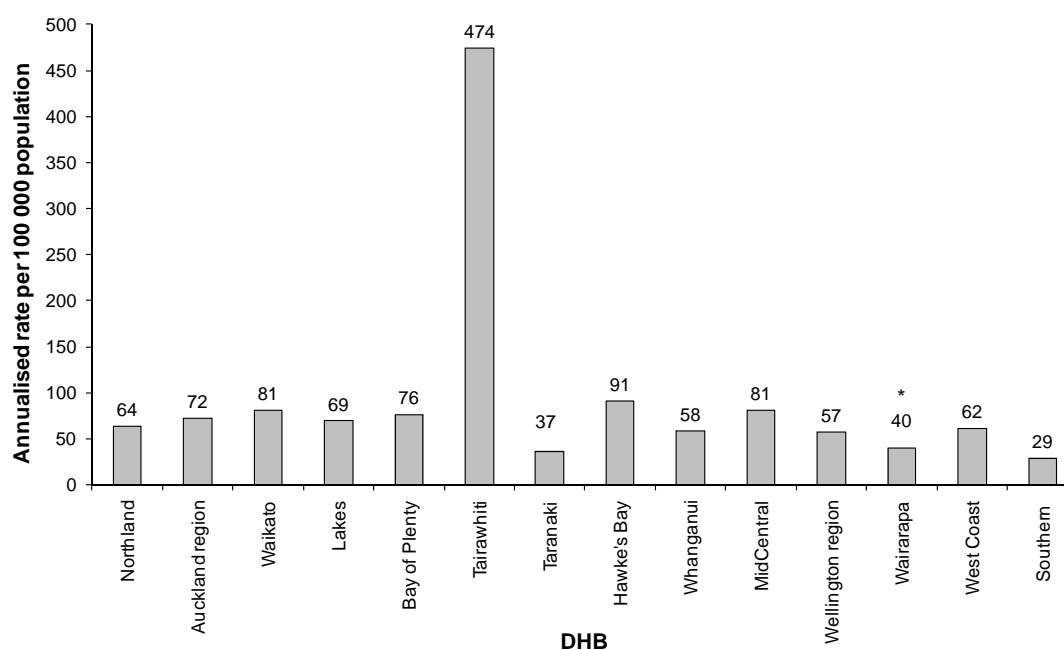
¹ Auckland region: Waitemata, Auckland, and Counties Manukau DHBs

² Wellington region: Hutt Valley and Capital & Coast DHBs

³ Data from other DHBs where selection criteria were not met

⁴ Total number and denominator for annualised rate calculations only includes DHBs meeting the selection criteria

Figure 2. Annualised gonorrhoea population rate by DHB, January to March 2011



Auckland region: Waitemata, Auckland, and Counties Manukau DHBs

Wellington region: Hutt Valley and Capital & Coast DHBs

* Annualised population rate may be unreliable as fewer than five cases were reported

Table 5. Number of gonorrhoea cases and national annualised gonorrhoea population rates by age group, January to March 2011

Age group (years)	Number of cases	Annualised rate per 100 000 population
0–4	2	–
5–9	0	0
10–14	11	18
15–19	191	280
20–24	192	287
25–29	102	164
30–34	68	119
35–39	40	63
40+	48	12
Unknown	6	–
Total ¹	660	72

¹ Total number and denominator for annualised rate calculations only includes DHBs meeting the selection criteria

Appendix A: List of Participating Laboratories

STI surveillance data is received from the following laboratories:

- Northland Pathology Laboratory, Northland
- Kaitaia Hospital Laboratory, Northland
- Bay of Islands Hospital Laboratory, Northland
- Whangarei Hospital Laboratory, Northland
- Dargaville Hospital Laboratory, Northland
- North Shore Hospital Laboratory, Waitemata (Chlamydia only)
- LabPlus, Auckland
- Labtests, Auckland
- Middlemore Hospital Laboratory, Counties Manukau
- Medlab Hamilton, Waikato
- Pathlab Waikato, Waikato
- Waikato Hospital Laboratory, Waikato
- Thames Hospital, Waikato
- Tokoroa Hospital, Waikato
- Te Kuiti Hospital, Waikato
- Taumarunui Hospital, Waikato
- Laboratory Services Rotorua, Lakes
- Taupo Southern Community Laboratory, Lakes
- Pathlab Bay of Plenty, Bay of Plenty
- Whakatane Hospital Laboratory, Bay of Plenty
- TLab Gisborne, Tairāwhiti
- Taranaki MedLab, Taranaki
- Hawke's Bay Hospital, Hawke's Bay (Chlamydia only)
- Hawke's Bay Southern Community Laboratory, Hawke's Bay
- Medlab Whanganui, Whanganui
- Medlab Central, MidCentral
- Medlab Wairarapa, Wairarapa
- Hutt Hospital Laboratory, Hutt Valley
- Aotea Pathology, Capital & Coast (Gonorrhoea only)
- Grey Hospital Laboratory, West Coast
- Canterbury Health Laboratories, Canterbury
- Christchurch Southern Community Laboratory, Canterbury
- Ashburton Southern Community Laboratory, Canterbury
- Oamaru Southern Community Laboratory, Southern
- Dunstan Southern Community Laboratory, Southern
- Otago Southern Community Laboratory, Southern
- Balclutha Southern Community Laboratory, Southern
- Queenstown Southern Community Laboratory, Southern
- Gore Southern Community Laboratories, Southern
- Invercargill Southern Community Laboratory, Southern

Appendix B: Maps of STI Laboratory Surveillance Coverage for Chlamydia and Gonorrhoea

Figure 3. Laboratory surveillance coverage for chlamydia by DHB, January to March 2011

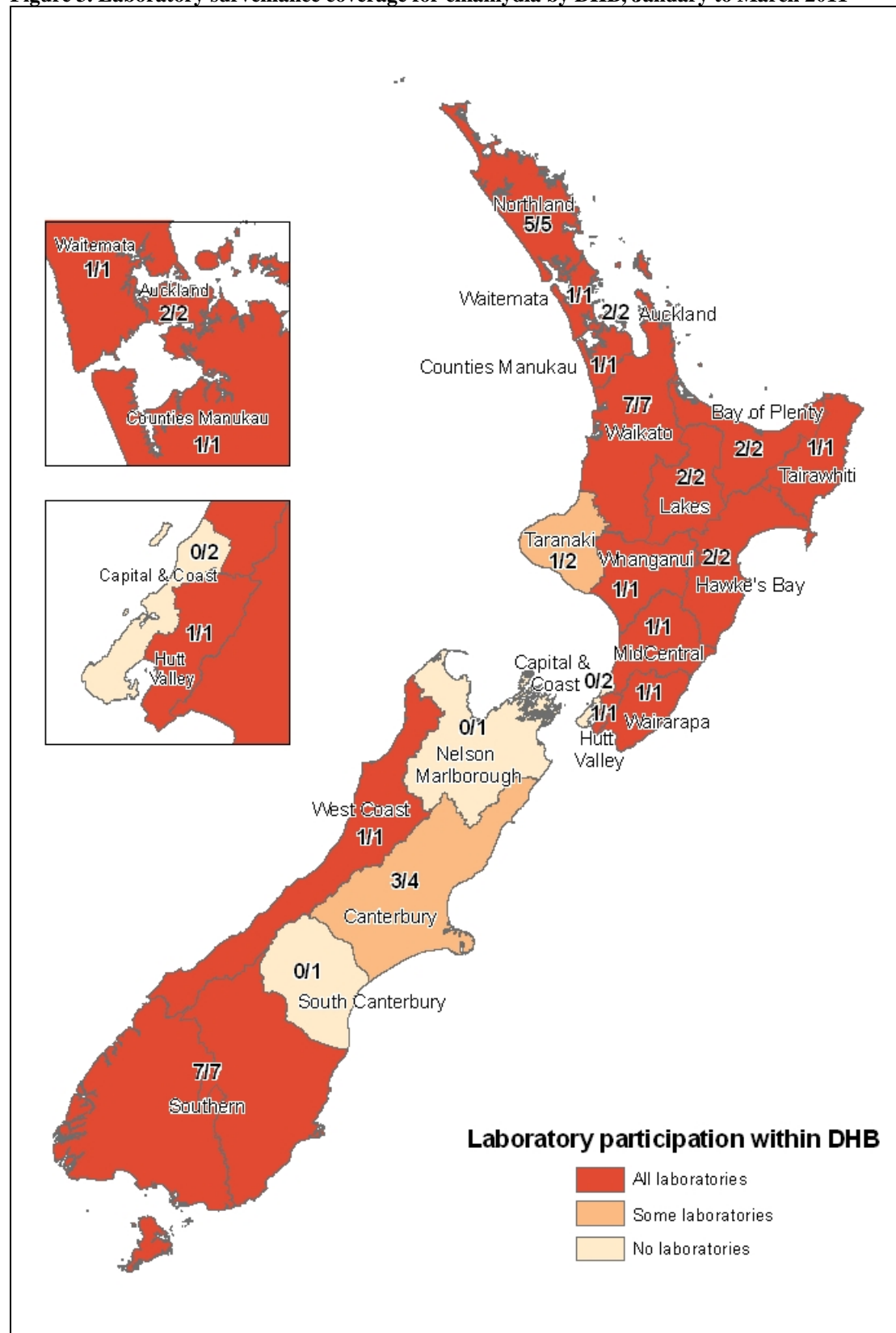


Figure 4. Laboratory surveillance coverage for gonorrhoea by DHB, January to March 2011

