

Genital Warts Surveillance Network Report 2004-2015

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Report to the Australian Department of Health



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Methods

The Genital Warts Surveillance Network is a sentinel surveillance system to monitor trends in the diagnosis of genital warts in Australia. The network comprises 54 sexual health clinics in all states and territories of the country. The aim of the network is to determine the population effects of the national human papillomavirus (HPV) vaccination program by monitoring the proportion of patients diagnosed with genital warts, from various populations.

Routinely collected information at sexual health clinics includes data on demographics, sexual behaviour, wart diagnosis and (in a subset of clinics) HPV vaccination status. These data are extracted directly from patient management information systems at each clinic and are collated at the Kirby Institute. Only the Australian born patients seen for the first time at sexual health clinics were included in this analysis. The proportion of patients diagnosed with genital warts were calculated by dividing the number of new patients diagnosed with genital warts by the total number of new patients seen at the clinics, multiplied by 100.

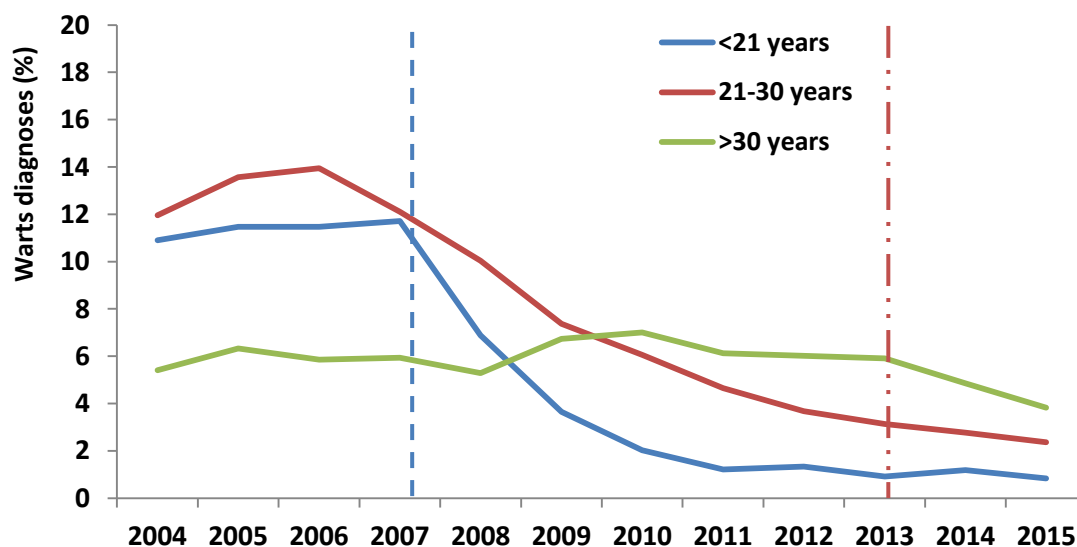
For this report, 42 clinics were able to provide retrospective data for all years starting from 2004. Data from the remaining clinics could not be included either because they were not available for all years starting from 2004 or because data could not be extracted in time for this report.

Results

Overall

The results show that among Australian born women, aged 21 years or younger and thus eligible for free HPV vaccine, 11.7% were diagnosed with genital warts in 2007; declining to 0.8% in 2015 (Figure 1; Table 1). Among Australian born women, aged 21-30 years, most of whom had been eligible for free HPV vaccine by the later years, 12.1% were diagnosed with genital warts in 2007; declining to 2.4% in 2015 (Figure 1; Table 1). The proportion of women aged >30 years diagnosed with genital warts declined slightly from 5.9% in 2007 to 3.8% in 2015 (Figure 1; Table 1).

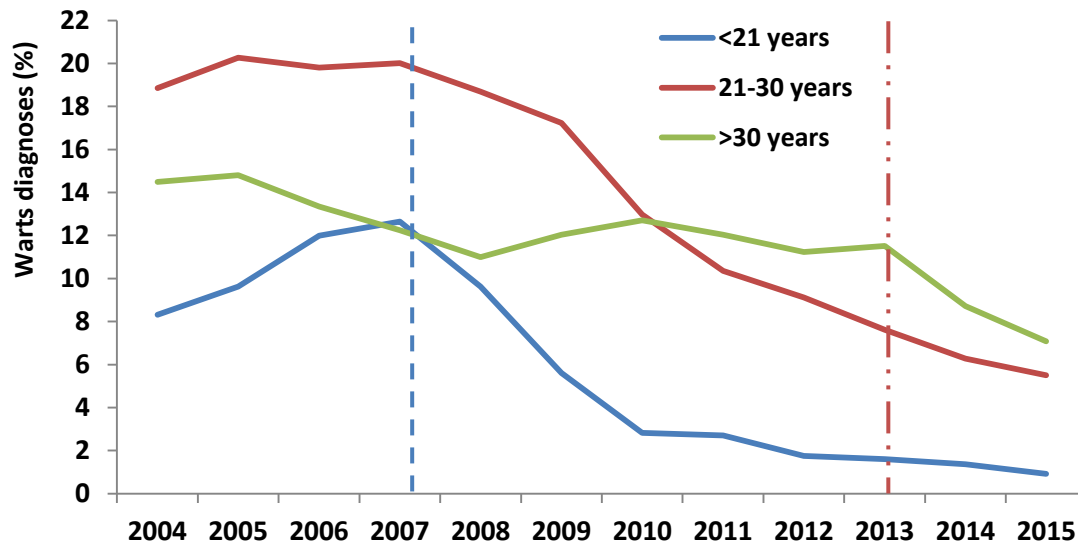
Figure 1: Proportion of Australian born women diagnosed with genital warts at first visit, by age group, 2004-2015



* The first dotted line represents the start of the national HPV vaccination program for women in mid-2007 and the second dotted line represents the start of the national HPV vaccination program for boys in 2013

Among Australian born heterosexual men aged 21 years or younger, 12.6% were diagnosed with genital warts in 2007, declining to 0.9% in 2015 (Figure 2; Table 2); and among Australian born heterosexual men aged 21-30 years, 20.0% were diagnosed in 2007, declining to 5.6% in 2015 (Figure 2; Table 2). There was also a decrease in genital warts diagnoses among heterosexual men older than 30 years, from 12.2% in 2007 to 7.1% in 2015 (Figure 2; Table 2).

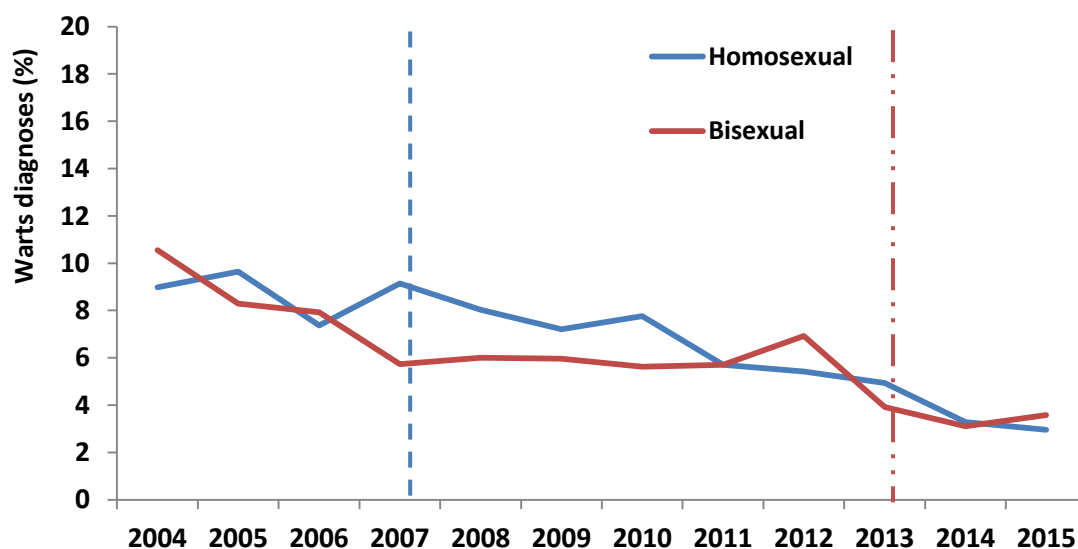
Figure 2: Proportion of Australian born heterosexual men diagnosed with genital warts at first visit, by age group, 2004-2015



* The first dotted line represents the start of the national HPV vaccination program for women in mid-2007 and the second dotted line represents the start of the national HPV vaccination program for boys in 2013

The proportion of homosexual and bisexual men diagnosed with genital warts has not declined to the extent observed in the heterosexual population (Figure 3; Table 2). Nevertheless, genital warts diagnoses declined from 9.1% among homosexual men in 2007 to 3.0% in 2015 (Figure 3; Table 2).

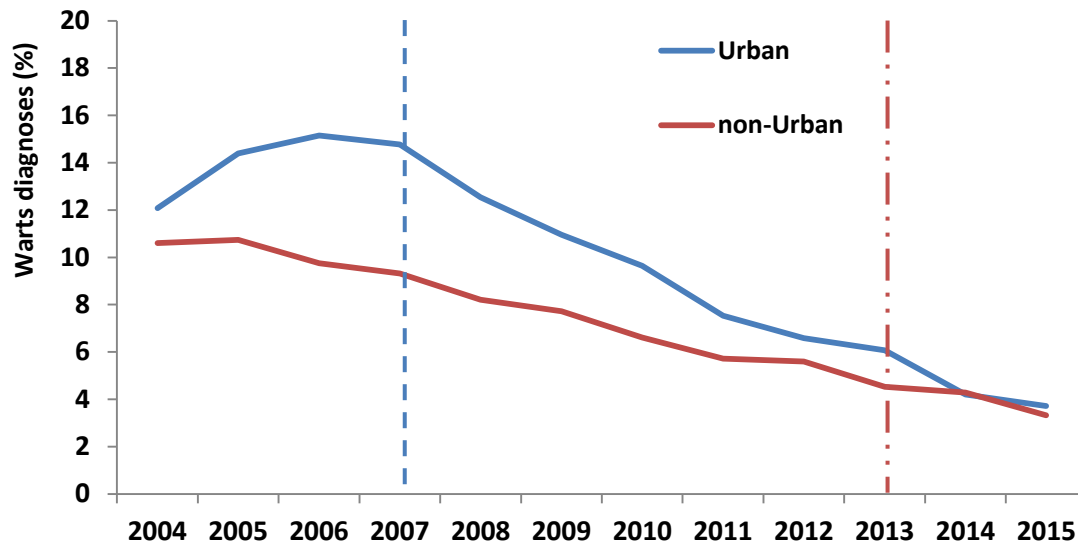
Figure 3: Proportion of Australian born homosexual and bisexual men diagnosed with genital warts at first visit, 2004-2015



* The first dotted line represents the start of the national HPV vaccination program for women in mid-2007 and the second dotted line represents the start of the national HPV vaccination program for boys in 2013

The proportion of patients diagnosed with genital warts has declined in both urban and non-urban settings. In urban areas, warts diagnoses declined from 14.8% in 2007 to 3.7% in 2015 (Figure 4).

Figure 4: Proportion of Australian born patients diagnosed with genital warts at first visit, by area of residence, 2004-2015

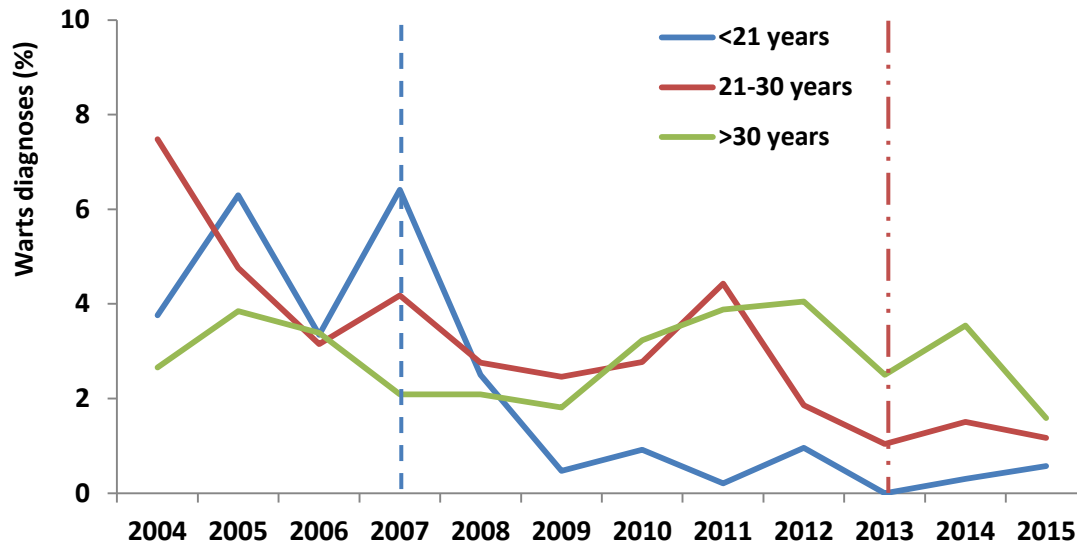


* The first dotted line represents the start of the national HPV vaccination program for women in mid-2007 and the second dotted line represents the start of the national HPV vaccination program for boys in 2013

Aboriginal and Torres Strait Islander people

Among Aboriginal and Torres Strait Islander women, aged 21 years or younger and thus eligible for free HPV vaccine, 6.4% were diagnosed with genital warts in 2007 with only 0.6% diagnosed in 2015 (Figure 5; Table 4). Among Aboriginal and Torres Strait Islander women, aged 21-30 years, most of whom were eligible for free HPV vaccine in later years, 4.2% were diagnosed with genital warts in 2007 dropping to 1.2% in 2014 (Figure 6; Table 4).

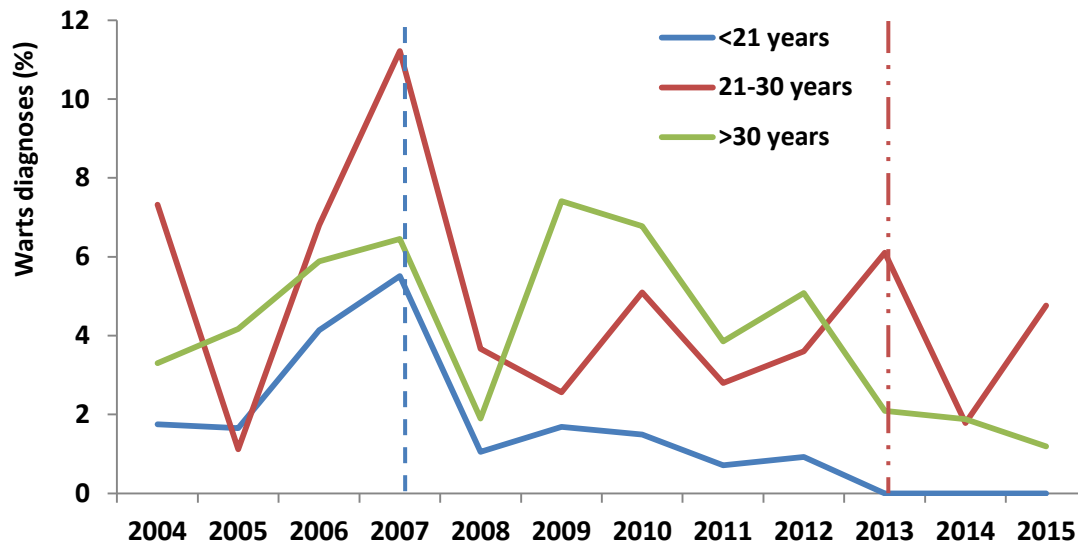
Figure 5: Proportion of Aboriginal and Torres Strait Islander women diagnosed with genital warts at first visit, by age group, 2004-2015



* The first dotted line represents the start of the national HPV vaccination program for women in mid-2007 and the second dotted line represents the start of the national HPV vaccination program for boys in 2013

Among heterosexual Aboriginal and Torres Strait Islander men, aged 21 years or younger, 5.5% were diagnosed with genital warts in 2007, with no cases diagnosed in 2014 or 2015 (Figure 6; Table 4). Among Aboriginal and Torres Strait Islander heterosexual men aged 21-30 years, 11.2% were diagnosed with genital warts in 2007, declining to 4.5% in 2015 (Figure 6; Table 4).

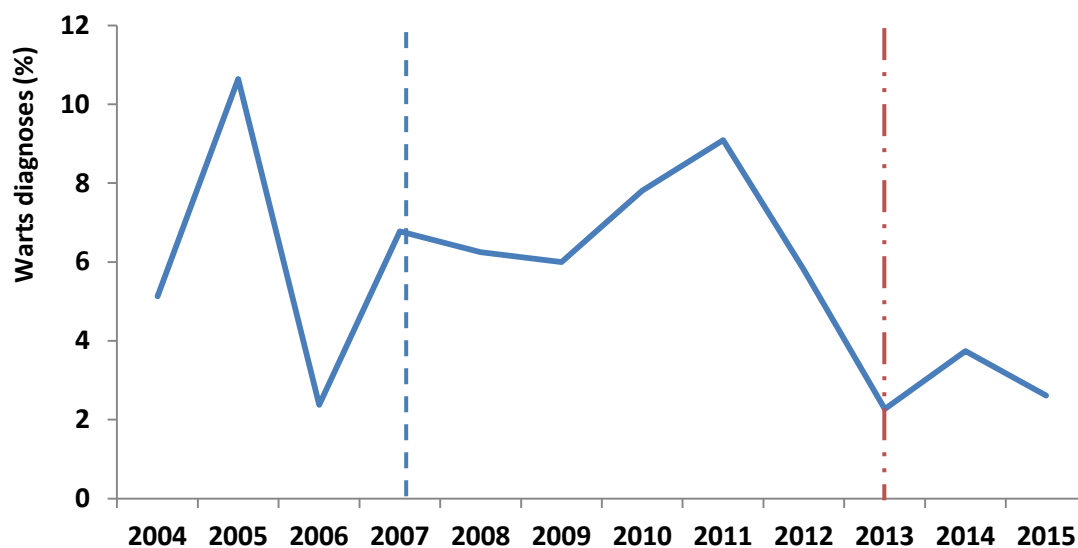
Figure 6: Proportion of Aboriginal and Torres Strait Islander heterosexual men diagnosed with genital warts at first visit, by age group, 2004-2015



* The first dotted line represents the start of the national HPV vaccination program for women in mid-2007 and the second dotted line represents the start of the national HPV vaccination program for boys in 2013

Among men who have sex with men, 6.8% were diagnosed with genital warts in 2007 declining to 2.6% in 2015 (Figure 7; Table 4).

Figure 7: Proportion of Aboriginal and Torres Strait Islander men who have sex with men diagnosed with genital warts at first visit, 2004-2015



* The first dotted line represents the start of the national HPV vaccination program for women in mid-2007 and the second dotted line represents the start of the national HPV vaccination program for boys in 2013

Appendix: tables

Table 1. Number of Australian born women seen for the first time at sexual health clinics participating in the Genital Wart Surveillance Network, 2004- 2015, number and proportion diagnosed with genital warts, by age group, and year

Warts diagnosis	Australian born women aged <21 years			Australian born women aged 21-30 years			Australian born women aged >30 years		
	Seen	Diagnosed	%	Seen	Diagnosed	%	Seen	Diagnosed	%
2004	2,312	252	10.9	3,996	478	12.0	3,122	169	5.4
2005	2,206	253	11.5	3,626	492	13.6	2,765	175	6.3
2006	2,337	268	11.5	3,526	492	14.0	2,480	145	5.9
2007	2,245	263	11.7	3,472	420	12.1	2,464	146	5.9
2008	2,150	148	6.9	3,062	307	10.0	2,251	119	5.3
2009	2,217	81	3.7	3,027	223	7.4	2,184	147	6.7
2010	2,179	44	2.0	3,120	189	6.1	2,156	151	7.0
2011	2,300	28	1.2	3,054	142	4.7	2,155	132	6.1
2012	2,161	29	1.3	3,096	114	3.7	2,010	121	6.0
2013	2,206	20	0.9	2,994	94	3.1	2,032	120	5.9
2014	2,016	24	1.2	2,964	82	2.8	2,105	102	4.9
2015	1,805	15	0.8	2,696	64	2.4	2,095	80	3.8

Data from 42 clinics in NSW, NT, QLD, VIC, WA

Table 2. Number of Australian born men seen for the first time at sexual health clinics participating in the Genital Wart Surveillance Network, 2004-2015, number and proportion diagnosed with genital warts, by age group, gender of sexual partners, and year

Warts diagnosis	Australian born heterosexual men aged <21 years			Australian born heterosexual men aged 21-30 years			Australian born heterosexual men aged >30 years			Australian born homosexual men			Australian born bisexual men		
	Seen	Diagnosed	%	Seen	Diagnosed	%	Seen	Diagnosed	%	Seen	Diagnosed	%	Seen	Diagnosed	%
2004	614	51	8.3	2,774	523	18.9	2,966	430	14.5	1,770	159	9.0	417	44	10.6
2005	665	64	9.6	2,861	580	20.3	2,764	409	14.8	1,647	159	9.7	398	33	8.3
2006	717	86	12.0	2,746	544	19.8	2,684	358	13.3	1,710	126	7.4	391	31	7.9
2007	704	89	12.6	2,618	524	20.0	2,548	312	12.2	1,663	152	9.1	384	22	5.7
2008	780	75	9.6	2,863	535	18.7	2,592	285	11.0	1,704	137	8.0	383	23	6.0
2009	1,018	57	5.6	3,088	532	17.2	2,616	315	12.0	1,942	140	7.2	385	23	6.0
2010	1,166	33	2.8	3,339	433	13.0	2,715	345	12.7	2,140	166	7.8	463	26	5.6
2011	1,216	33	2.7	3,522	365	10.4	2,776	334	12.0	2,295	131	5.7	490	28	5.7
2012	1,031	18	1.8	3,421	312	9.1	2,778	312	11.2	2,527	137	5.4	477	33	6.9
2013	1,053	17	1.6	3,293	251	7.6	2,677	308	11.5	2,900	143	4.9	638	25	3.9
2014	951	13	1.4	3,319	208	6.3	2,533	221	8.7	3,074	101	3.3	804	25	3.1
2015	869	8	0.9	2,760	152	5.5	2,343	166	7.1	2,902	86	3.0	837	30	3.6

Data from 42 clinics in NSW, NT, QLD, VIC, WA

Table 3. Number of Australian-born men and women seen for the first time at sexual health clinics participating in the Genital Wart Surveillance Network, 2004-2015, number and proportion diagnosed with genital warts, by area of residence, and year

Warts diagnosis	Urban (Major cities)			Non-urban (Regional, remote)		
	Seen	Diagnosed	%	Seen	Diagnosed	%
2004	7,705	931	12.1	12,285	1,303	10.6
2005	7,756	1,116	14.4	10,954	1,177	10.7
2006	7,128	1,080	15.2	11,267	1,099	9.8
2007	7,006	1,035	14.8	11,082	1,033	9.3
2008	7,193	902	12.5	9,945	816	8.2
2009	7,024	770	11.0	10,520	812	7.7
2010	7,810	753	9.6	10,510	695	6.6
2011	9,016	679	7.5	9,952	569	5.7
2012	9,238	609	6.6	9,333	523	5.6
2013	9,379	569	6.1	9,778	443	4.5
2014	10,146	426	4.2	10,426	447	4.3

Data from 42 clinics in NSW, NT, QLD, VIC, WA

Table 4. Number of Aboriginal and Torres Strait Islander women seen for the first time at sexual health clinics participating in the Genital Wart Surveillance Network, 2004-2015, number and proportion diagnosed with genital warts, by age group, and year

Warts diagnosis	Aboriginal and Torres Strait Islander women aged <21 years			Aboriginal and Torres Strait Islander women aged 21-30 years			Aboriginal and Torres Strait Islander women aged >30 years		
	Seen	Diagnosed	%	Seen	Diagnosed	%	Seen	Diagnosed	%
2004	213	8	3.8	147	11	7.5	188	5	2.7
2005	254	16	6.3	147	7	4.8	182	7	3.9
2006	328	11	3.4	222	7	3.2	177	6	3.4
2007	359	23	6.4	263	11	4.2	191	4	2.1
2008	400	10	2.5	254	7	2.8	239	5	2.1
2009	427	2	0.5	244	6	2.5	221	4	1.8
2010	436	4	0.9	289	8	2.8	217	7	3.2
2011	470	1	0.2	271	12	4.4	232	9	3.9
2012	519	5	1.0	269	5	1.9	222	9	4.1
2013	425	0	0.0	289	3	1.0	280	7	2.5
2014	333	1	0.3	265	4	1.5	254	9	3.5
2015	353	2	0.6	256	3	1.2	251	4	1.6

Data from 42 clinics in NSW, NT, QLD, VIC, WA

Table 5. Number of Aboriginal and Torres Strait Islander men seen for the first time at sexual health clinics participating in the Genital Wart Surveillance Network, 2004-2015, number and proportion diagnosed with genital warts, by age group, gender of sexual partners, and year

Warts diagnosis	Aboriginal and Torres Strait Islander heterosexual men aged <21 years			Aboriginal and Torres Strait Islander heterosexual men aged 21-30 years			Aboriginal and Torres Strait Islander heterosexual men aged >30 years			Aboriginal and Torres Strait Islander men who have sex with men		
	Seen	Diagnosed	%	Seen	Diagnosed	%	Seen	Diagnosed	%	Seen	Diagnosed	%
2004	114	2	1.8	82	6	7.3	91	3	3.3	39	2	5.1
2005	121	2	1.7	89	1	1.1	96	4	4.2	47	5	10.6
2006	145	6	4.1	103	7	6.8	102	6	5.9	42	1	2.4
2007	127	7	5.5	98	11	11.2	93	6	6.5	59	4	6.8
2008	190	2	1.1	109	4	3.7	105	2	1.9	48	3	6.3
2009	236	4	1.7	117	3	2.6	108	8	7.4	50	3	6.0
2010	268	4	1.5	157	8	5.1	118	8	6.8	64	5	7.8
2011	282	2	0.7	143	4	2.8	130	5	3.9	77	7	9.1
2012	327	3	0.9	139	5	3.6	118	6	5.1	69	4	5.8
2013	352	0	0.0	164	10	6.1	191	4	2.1	88	2	2.3
2014	258	0	0.0	169	3	1.8	213	4	1.9	107	4	3.7
2015	227	0	0.0	147	7	4.8	168	2	1.2	115	3	2.6

Data from 42 clinics in NSW, NT, QLD, VIC, WA

Appendix: papers, presentations, and reports

Papers

1. Ali H, Guy RJ, Wand H, Read TRH, Regan DG, Grulich AE, Fairley CK, Donovan B. Decline in in-patient treatments for genital warts among young Australians following the national HPV vaccination program. ***BMC Infectious Diseases*** 2013; 13: 140.
2. Read TRH, Donovan B, Fairley CK. Vaccine coverage and clinical effects: dramatic reductions in genital warts in Australians under 21 years of age. ***HPV Today*** 2013; 28: 12-13.
3. Waters EK, Kaldor JM, Hamilton AJ, Smith AMA, Philp DJ, Donovan B, Grulich AE, Regan DG. Fixed sized samples for type-specific surveillance of human papillomavirus in genital warts. ***Sexual Health*** 2013; 10: 95-96.
4. Ali H, Donovan B, Wand H, Read T, Regan D, Grulich AE, Fairley CK, Guy RJ. Genital warts in young Australians five years into the national human papillomavirus vaccination program: national surveillance data. ***British Medical Journal*** 2013; 346: f2032 [Winner of the 2014 Aileen Plant Memorial Award for Best Peer-reviewed Article in Infectious Disease Epidemiology].
5. Donovan B, Ali H. National HPV vaccination: authors' reply to Gupta. ***British Medical Journal*** 2013; 346: f3734.
6. Poynten IM, Waterboer T, Jin F, Templeton DJ, Prestage G, Donovan B, Pawlita M, Fairley CK, Garland S, Grulich AE. Human papillomavirus types 6 and 11 seropositivity: risk factors and association with ano-genital warts among homosexual men. ***Journal of Infection*** 2013; 66: 503-511.
7. Donovan B, Guy RJ. Evaluating human papillomavirus vaccination programs (invited editorial). ***Sexually Transmitted Diseases*** 2013; 40: 290-291.
8. Korostil I, Ali H, Guy R, Donovan B, Law M, Regan D. Near elimination of genital warts in Australia predicted with extension of human papillomavirus vaccination to males. ***Sexually Transmitted Diseases*** 2013; 40: 833-835.
9. Liu B, Donovan B, Brotherton J, Saville M, Kaldor JM. Genital warts and chlamydia in young Australian women: comparison of population-based surveys in 2001 and 2011. ***Sexually Transmitted Infections*** 2014; 90: 532-537.
10. Ali H, Donovan B, Fairley CK, Read T, Wand H, Regan D, Grulich AE, Guy R. Evaluating the National HPV Vaccination Program in Australia through inpatient treatment of genital warts. ***Sexually Transmitted Diseases*** 2014; 41 (suppl 1): S10.
11. Chow EPF, Read TRH, Wigan R, Donovan B, Chen MY, Bradshaw CS, Fairley CK. Ongoing decline in genital warts among young heterosexuals seven years after the Australian national human papillomavirus (HPV) vaccination programme. ***Sexually Transmitted Infections*** 2015; 91: 214-219.
12. Drolet M, Bernard E, Boily M-C, Ali H, Baandrup L, Bauer H, Brisson J, Brotherton J, Cummings T, Donovan B, Fairley CK, Flagg EW, Kahn J, Kavanagh K, Kjaer SK, Kliewer E, Lemieux-Mellouki P, Markowitz L, Mboup A, Mesher D, Niccolai L, Oliphant J, Pollock K, Soldan K, Sonnenberg P, Tabrizi S, Tanton C, Brisson M. Strong evidence of population-level impact and herd effects following human papillomavirus vaccination programs: a systematic review and meta-analysis. ***Lancet Infectious Diseases*** 2015; 15: 565-580.
13. Ali H, O'Connor CC, Callander D, Saulo D, Graham S, Kong M, Regan DJ, Grulich AE, Fairley CK, Guy RJ, Donovan B. The impact of HPV vaccination on genital warts in Aboriginal Australians: analysis of national data. ***Medical Journal of Australia***; under review.

Presentations

1. Grulich AE. Real world impact of HPV vaccination. Quadrivalent Vaccine Symposium: Optimizing Strategies for Protecting Girls and Boys Against HPV Cancers and Other Related Diseases. Merck Symposium MSD Vaccine Sponsored Satellite Symposium (Invited Presentation), **Vienna, Austria**, 2013.
2. Grulich AE. MSD Symposium. The good news of preventing disease part 1. Eurogin International Multidisciplinary Congress (Invited Presentation), **Florence, Italy**, 2013.
3. Donovan B. Global impact of HPV vaccination. Global HPV Stand Alone Scientific Symposium. **Amsterdam, Holland**, June 2013.

4. Donovan B. Global real world impact of HPV vaccination (invited speaker). Latin American Pediatric Infectious Disease Conference. **Sao Paulo**, June 2013.
5. Donovan B. Why is Australia vaccinating boys against HPV? (invited oral presentation). World STI & AIDS Congress (ISSTD/IUSTI). **Vienna**, Austria, July 2013.
6. Ali H, Korostil I, Guy R, Wand H, Grulich AE, Read TRH, Regan DG, Fairley CK, Donovan B. Do we need to vaccinate males against HPV? (proffered oral presentation). World STI & AIDS Congress (ISSTD/IUSTI). **Vienna**, July 2013.
7. Donovan B. Chlamydia and HPV – current status (invited speaker). Royal Australian and New Zealand College of Obstetricians & Gynaecologists Annual Scientific Meeting, **Sydney**, September 2013.
8. Fairley C. 3rd Joint Conference of the British HIV Association (BHIVA) with the British Association for Sexual Health and HIV (Plenary Speaker). **Liverpool**, UK, April 2014.
9. Donovan B. The Australian HPV vaccination experience (Presidential keynote address). Biennial Scientific Meeting of the American Society for Colposcopy and Cervical Pathology, **Scottsdale**, Arizona, April 2014.
10. Ali H, Donovan B, Fairley CK, Read T, Wand H, Regan D, Grulich AE, Guy R. Evaluating the National HPV vaccination program in Australia through inpatient treatment of genital warts (proffered oral presentation). CDC STD Prevention and IUSTI World Conference, **Atlanta**, USA, June 2014.
11. Fairley C. Rolling out of HPV vaccination: successes, challenges and lessons learnt: Perspectives from Australia. International Union against Sexually Transmitted Infections (Plenary Speaker) CDC, **Atlanta**, USA, June 2014.
12. Fairley C. HPV vaccination in gay men. Australian Society for Microbiology, Annual Scientific Meeting (Symposia Speaker). **Melbourne**, Australia, July 2014.
13. Fairley C. Clinical issues related to anal HPV infection and cancer (1st presentation) & Anus (2nd presentation). Management & Control of HPV Associated Diseases (Invited Speaker) EUROGIN 2015. **Seville**, Spain, February 2015.
14. Fairley C. Robbie Morton Lecture: Novel HPV vaccines and therapeutic use of HPV vaccines. BASHH Spring Conference, Royal Concert Halls, **Glasgow**, Scotland, June 2015
15. Ali H, O'Connor CC, Callander D, Saulo D, Graham S, Kong M, Regan DJ, Grulich AE, Fairley CK, Guy RJ, Donovan B. The impact of HPV vaccination on genital warts in Aboriginal Australians: analysis of national data (late breaker proffered oral presentation). World STI & HIV Congress, **Brisbane**, September 2015.
16. Grulich AE. Panel Member: HPV Vaccine Update, Merck Vaccines Summit, **Dubai**, UAE, 2015.
17. Donovan B. Implementation experiences: strategies to improve uptake (plenary). Global HPV Stand-alone Symposium, **Amsterdam**, Holland, November 2015.
18. Donovan B. Safety updates and recommendations (plenary). Global HPV Stand-alone Symposium, **Amsterdam**, November 2015.
19. Donovan B. Real world impact data and effectiveness (plenary). Global HPV Stand-alone Symposium, **Amsterdam**, November 2015.
20. Donovan B. The Australian HPV vaccination program (plenary). MSD Asia-Pacific HPV9 Regional Speakers Forum, **Seoul**, March 2016.
21. Donovan B. The Australian HPV vaccination program (keynote address). Australian Embassy and National Cancer Council of Mongolia Symposium on HPV Vaccination, **Ulaan Baatar**, March 2016.
22. Donovan B. The Australian HPV vaccination program (plenary). IX International Forum of Dermatovenereologists, **Moscow**, March 2016.
23. Donovan B. Evolution in Sexual Health Medicine (plenary). Royal Australasian College of Physicians Annual Congress, **Adelaide**, May 2016.

Reports

1. The Kirby Institute. *HIV, Viral Hepatitis and Sexually Transmissible Infections in Australia Annual Surveillance Report*. 2013. Sydney, NSW: The Kirby Institute.
2. The Kirby Institute. *HIV, Viral Hepatitis and Sexually Transmissible Infections in Australia Annual Surveillance Report*. 2014. Sydney, NSW: The Kirby Institute.
3. The Kirby Institute. *HIV, Viral Hepatitis and Sexually Transmissible Infections in Australia Annual Surveillance Report*. 2015. Sydney, NSW: The Kirby Institute.