

Background

- > >90% cases of anogenital warts are caused by the HPV 6 and 11 whereas cancers are mostly associated with HPV 16 and 18
- > It is estimated that >80% of anal cancers may be linked to HPV infection
- > Incidence of squamous anal cancer is on the rise in several places worldwide, including in Quebec (Table 1).

Table 1. Standardized annual squamous cell anal carcinoma incidence* in Quebec, 1984-2001

Year of diagnosis	Men		Women	
	MMA+	Other regions	MAM+	Other regions
1984-1986	0.19*	0.15	0.38	0.16
1999-2001	0.96	0.26	0.89	0.55
% variation	353%	73%	134%	244%

*Rates per 100,000 inhabitants; +Montreal Metropolitan Area
Source: Goggin, P et al. 22nd Int. Papillomavirus Conference, Vancouver, Canada, 2005

Standardized annual incidence rate (per 100,000) of anal cancer by gender in Quebec, 1984-2005

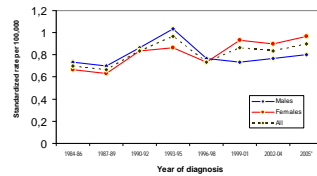


Table 2. No. individuals treated and no. treatments for anal condyloma, Québec, Canada, 1990-99

Age group (years)	No. of individuals				No. of treatments							
	Overall		Females		Males		Overall		Females		Males	
	N	%	N	%	N	%	N	%	N	%	N	%
0	4	0.0	3	0.0	1	0.0	5	0.0	4	0.0	1	0.0
1-4	163	0.8	84	1.0	79	0.6	200	0.3	101	0.6	99	0.2
4-9	115	0.6	65	0.8	50	0.4	150	0.3	89	0.5	61	0.1
10-14	46	0.2	30	0.4	16	0.1	79	0.1	60	0.3	19	0.0
15-19	971	4.7	798	9.4	173	1.4	1974	3.4	1581	9.2	393	1.0
20-24	3489	16.8	2084	24.7	1405	11.4	9551	16.3	4898	28.5	4653	11.3
25-29	4207	20.2	1626	19.2	2581	20.9	12816	21.9	3533	20.6	9283	22.5
30-34	3759	18.1	1074	12.7	2685	21.7	11919	20.4	2220	12.9	9699	23.5
35-39	2965	14.2	848	10.0	2117	17.1	9410	16.1	1535	8.9	7875	19.1
40-44	1937	9.3	617	7.3	1320	10.7	5747	9.8	1114	6.5	4633	11.2
45-49	1307	6.3	495	5.9	812	6.6	2933	5.0	876	5.1	2057	5.0
50-54	781	3.8	286	3.4	495	4.0	1766	3.0	511	3.0	1255	3.0
55-59	461	2.2	182	2.2	279	2.3	897	1.5	294	1.7	603	1.5
60-64	246	1.2	99	1.2	147	1.2	389	0.7	148	0.9	241	0.6
65-69	183	0.9	69	0.8	114	0.9	314	0.5	115	0.7	199	0.5
70-74	117	0.6	49	0.6	68	0.5	215	0.4	57	0.3	158	0.4
75-79	37	0.2	16	0.2	21	0.2	49	0.1	21	0.1	28	0.1
80-84	28	0.1	16	0.2	12	0.1	32	0.1	16	0.1	16	0.0
85+	9	0.0	6	0.1	3	0.0	11	0.0	6	0.0	5	0.0

Area of residence	6367/9630=66%				26476/34098=78%							
	Metropolitan Montreal	Other region	Unknown region	Overall	Metropolitan Montreal	Other region	Unknown region	Overall				
Metropolitan Montreal	9630	46.2	3263	38.6	6367	51.4	34098	58.3	7622	44.4	26476	64.1
Other region	8806	47.1	4580	54.2	5225	42.2	20786	35.6	8346	48.6	12440	30.1
Unknown region	1390	6.7	604	7.2	786	6.3	3577	6.1	1211	7	2362	5.7
Overall	20825	100.0	8447	100.0	12378	100.0	58461	100.0	17179	100.0	41278	100.0

Table 3. Risk of anal cancer for those treated for anal condyloma, Québec, 1990-1999

	# anal cancers	Expected #cases	SIR	95% C.I.
Gender				
Female	4	0.05	73.4	19.1-163.2
Male	11	0.08	130.7	64.9-219.4
Areas of residence				
Montreal	14	0.06	217.4	118.4-346.1
Other areas	1	0.07	15.3	0.01-59.8
Overall	15	0.14	107.7	60.1-169.1

Methods

- > Medicare claims were linked to Quebec tumour registry records to estimate the risk of a diagnosis of anal cancer after receiving treatment for anogenital warts.
- > Standardize incidence ratios (SIR) of anal cancer were calculated taking the observed numbers found over the expected numbers derived from the incidence for the general population.

Objective

Estimate the burden HPV infection from 1990- 1999 in a population-based cohort in Quebec

- > calculate the number of treatments and the number of individuals treated for anal warts
- > calculate the risk of anal cancer in this population.

Results

From 1990 to 1999 there were 58,461 treatments for anal condyloma performed on 20,825 patients, with an average of 2.8 treatments per person

- > As for treatment: men were over-represented (59%), particularly in the Metropolitan Montreal area (66%);
- > As for individuals: men were treated more frequently for condyloma than women (70% vs 30%), particularly in the Montreal Metropolitan area where 78% of patients were male;
- > 80% of patients were between the ages 15-44;
- > 15 cases of anal cancer were reported to the provincial cancer registry during the study period, 14 of them in Metropolitan Montreal;
- > The anal cancer incidence rate in the general population was estimated to be 0.67 per 100,000, resulting in an expected number of anal cancers of 0.14. The overall standardized incidence ratio was 108 for the province but much higher in the Montreal area at 217

Conclusion

- > Anal condyloma was associated with significant clinical burden: on average over 2000 patients were treated every year.
- > This condition seems to affect particularly urban males.
- > Patients treated for anal condyloma presented a much higher risk of anal cancer than the general population.
- > Although a causality link between HPV 6 and 11 and anal cancer has never been documented, prospective studies that include HPV detection and genotyping are needed to ascertain the role of specific HPV infections and clarify the contribution of shared risk factors such as sexual behavior and HIV infection.
- > An HPV vaccine that includes protection against HPV 6 and 11 has great potential for reducing the burden of anal disease.

Reference

Goggin P, Louchini R, Steben, M. Trends in anal cancer incidence in Quebec, 2005 22nd International Papillomavirus Conference, Vancouver, Canada, 2005.