

Burden of HPV Disease in Nunavut

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ter 63°23'45.49" N 73°56'24.83" W

Streaming |.|| 41%

Eye alt 4336.0

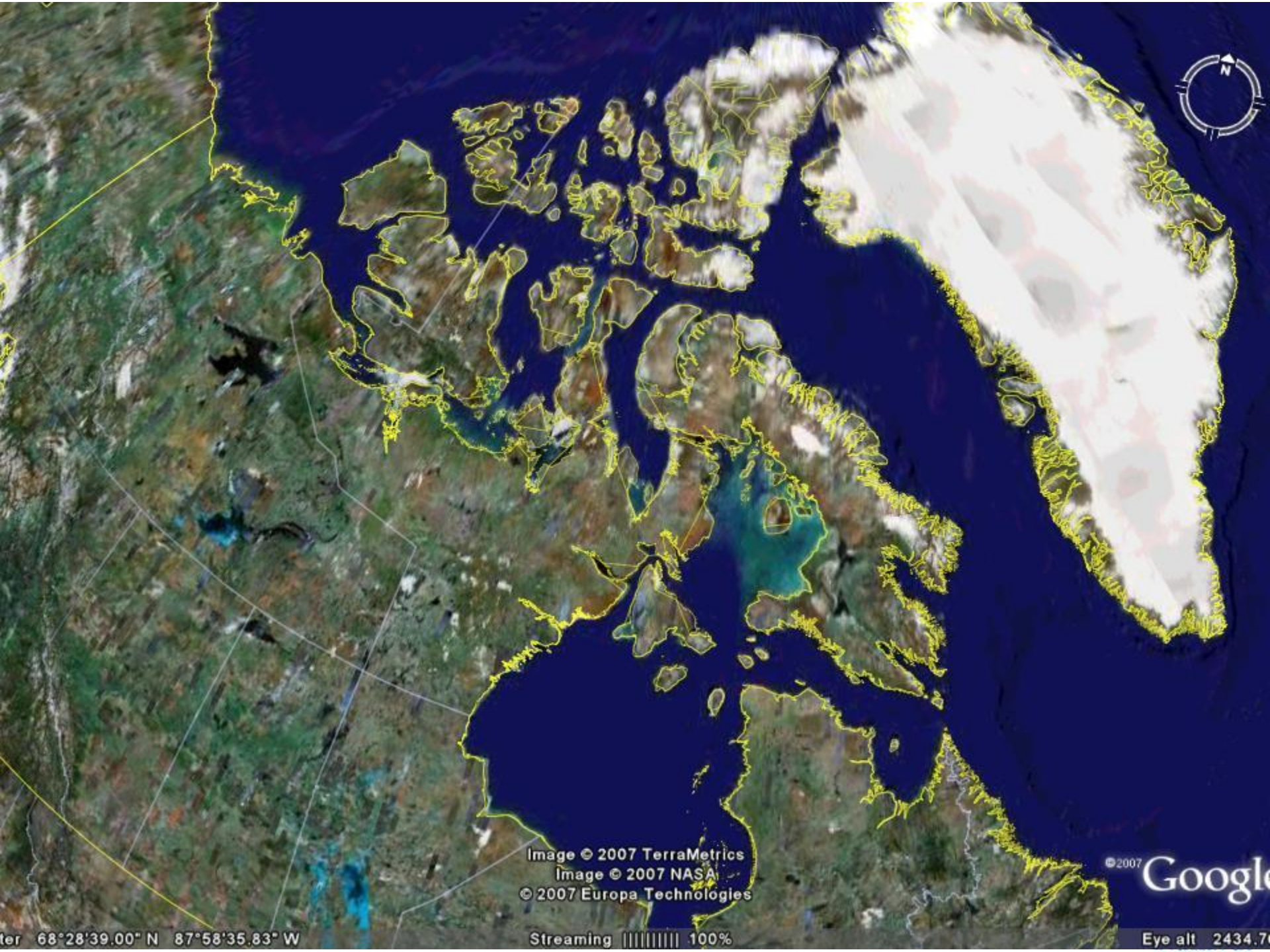


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ter 68°28'39.00" N 87°58'35.83" W

Streaming ||||| 100%

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Nunavut Facts



- Established 1999
- Population 30,000
- 85% Inuit
- 50% under age 21
- Inuktitut and Innuinaqtun spoken by 80% of the population
- 25 communities-- only accessible by air or sea

HPV and related disease in Nunavut

- Cervical cancer incidence decreased between 1994 and 2000 in Nunavut
- 2005 Pap screening rate of 79.3% (screened within the last 3 years)
- 1999 study of 19 communities, representing 80% of NU population (Healy et al, 2001) found a 26% prevalence of high risk HPV and 6.9% SIL
- Publicly funded, school-based vaccination program initiated March 2010 (grade 6 girls)

HPV Surveillance in Nunavut

- Initiated in 2008 in collaboration with the Public Health Agency of Canada
- Objectives:
 - Provide evidence for decision-making around the HPV vaccine in Nunavut
 - Examine differences in HPV prevalence in Inuit and non-Inuit women
 - Contribute to national baseline prevalence of HPV prevalence

Surveillance Methods

- Routine Pap screening at all Nunavut community health clinics January 2008 to March 2009
- Cytology performed at Dynalife Dx, Edmonton (usual practice)
- Leftover liquid-based cytology specimen sent to National Microbiology Laboratory for HPV typing
- Non-nominal results linked by unique ID

Analysis

- Prevalence of HPV types and Pap results in all Nunavut women
- Comparison of age-standardized rates between Inuit and non-Aboriginal women
- Association between high risk HPV type and high grade cervical lesion in Inuit women (OR, 95% confidence interval)
 - High risk types 16, 18, 26, 31, 33, 35, 39, 45, 51, 52, 53, 56, 58, 59, 66, 68, 73, 82 (Munoz et al, 2003)
 - High grade lesion includes Bethesda categories ASC-H, HSIL, squamous cell carcinoma

HPV prevalence in Nunavut women (N = 4,043)

HPV Result	N	%
Any HPV	1207	29.9
Multiple types of HPV	385	9.5
Any high risk HPV type	893	22.1
Multiple high risk types	197	4.9

Prevalence of most common high risk HPV types in Nunavut women (N = 4,043)

HPV type	N	%
HPV 16	259	6.4
HPV 31	125	3.1
HPV 59	92	2.3
HPV 58	82	2
HPV 45	77	1.9
HPV 66	75	1.9
HPV 39	71	1.8
HPV 51	69	1.7
HPV 18	57	1.4
HPV 33	49	1.2

Prevalence of Pap outcomes in Nunavut women (N = 4,043)

Pap Result	N	%
Non-Diagnostic	12	0.3
Benign/Negative	3747	92.7
ASC-US	125	3.1
Atypical Glandular Cells, NOS	1	0
LSIL	104	2.6
ASC-H	25	0.6
HSIL	28	0.7
Squamous cell carcinoma, NOS	1	0

Age-standardized prevalence of HPV and Pap outcomes in Inuit and non-Aboriginal women (N = 3,854)

Positive for:	Non-Aboriginal (N=401)		Inuit (N=3,453)	
	N	Age-standardized % (95% CI)	N	Age-standardized % (95% CI)
Abnormal Pap	16	3.1 (1.5, 4.7)	255	6.7 (5.0, 8.3)
High grade lesion	<5	0.3 (0.0, 0.7)	48	1.0 (0.7, 1.3)
Any HPV type	86	18.2 (14.3, 22.2)	1,070	28.7 (25.9, 31.6)
2+ HPV types	21	4.8 (2.6, 6.9)	351	9.1 (7.3, 10.8)
High risk HPV	61	12.3 (9.3, 15.4)	795	21.3 (18.6, 24.0)
2+ high risk HPV	9	1.8 (0.5, 3.1)	180	4.7 (3.4, 5.9)
HPV16 and/or 18	23	4.5 (2.6, 6.5)	267	7.8 (5.6, 9.5)
HPV 16	18	3.8 (1.9, 5.6)	226	6.1 (4.4, 7.7)
HPV 31	<5	0.5 (0.0, 1.0)	115	2.4 (2.0, 2.9)
HPV 58	<5	0.5 (0.0, 1.0)	75	2.9 (1.3, 4.4)
HPV 59	5	1.1 (0.0, 2.2)	86	1.9 (1.5, 2.4)
Low risk HPV	23	4.9 (2.8, 7.0)	287	7.3 (6.0, 8.7)

Odds of high grade cervical lesion associated with type-specific HPV infection in Inuit women (N = 4196)

HPV type	Normal result or low grade lesion (N=4122)		High grade lesion (N=74)		OR (95% CI)
	N	%	N	%	
HPV16	272	6.6	35	47.3	12.7 (7.9, 20.4)
HPV18	62	1.5	6	8.1	5.8 (2.4, 13.8)
HPV26	1	0.0	1	1.4	56.5 (3.5, 911.3)
HPV31	151	3.7	6	8.1	2.3 (1.0, 5.4)
HPV33	53	1.3	3	4.1	3.2 (1.0, 10.6)
HPV35	35	0.8	5	6.8	8.5 (3.2, 22.3)
HPV39	72	1.7	3	4.1	2.4 (0.7, 7.7)
HPV45	88	2.1	8	10.8	5.6 (2.6, 11.9)
HPV52	53	1.3	2	2.7	2.1 (0.5, 8.9)
HPV56	45	1.1	4	5.4	5.2 (1.8, 14.8)
HPV58	88	2.1	6	8.1	4.0 (1.7, 9.6)
HPV59	104	2.5	3	4.1	1.6 (0.5, 5.3)
HPV66	86	2.1	1	1.4	0.6 (0.1, 4.7)
HPV73	20	0.5	1	1.4	2.8 (0.4, 21.2)

Summary

- High rates of HPV in Nunavut
- Inuit women have higher rates of some, but not all HPV types and higher rates of HPV overall than non-Aboriginal women
 - Particularly in younger age groups
 - Rates of high grade cervical lesions are not significantly different between groups
- Prevalence of HPV 31 is higher than in studies done in other parts of Canada, but its significance to the development of cervical cancer is uncertain

Conclusions

- Rates of HPV types contained in the quadrivalent vaccine provided evidence for the introduction of a territorial immunization program
- Reasons for higher rates of some HPV types in Inuit women require investigation
- Further surveillance will increase statistical power to examine the risk of high grade lesions due to HPV infection in Inuit women

Acknowledgement

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