Descriptive Epidemiology of STBBIs in the Winnipeg Health Region

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March 22, 2011

Methods

Case definitions and case reporting

In Manitoba, all confirmed cases of Chlamydia (CT) and gonorrhea (GC) are reportable by laboratories and attending health care professionals to the chief public health officer at Manitoba Health. Provincial case definitions and protocols guide laboratory testing, diagnosis, treatment and public health management.

Data collection and management

Regional data were extracted (in April 2009) from the STI table of the provincial Communicable Disease Surveillance System using client's postal code (at the time of testing). Duplicate records were identified (based on client identification number, date of specimen collection and type of infection) and excluded from tabulations. Specimen collection date was used to define the year for which infections were assigned; as well as to calculate age at each infection. CT and GC co-infections were counted separately. Co-infections were counted as such if the same client tested positive for both CT and GC on the same specimen collection date. All extra-genital (i.e., eyes and joints) were excluded.

Statistical Methods

The crude annual incidence rate of each infection was calculated using the corresponding mid-point population of the region as the denominator (based on municipal and postal code combination). This crude rate was then age-adjusted to the region's population in 2000 and 95% confidence intervals were generated, using direct standardization (dstdize in Stata 11).

Methods cont'd

NB: All analyses are based on *number of infections*, and not on individuals. That is, the following analyses count the number of infections, and not the number of individuals with infections.

Community Area (CA) and Neighbourhood Cluster (NC) definition

To define CA and NC, the postal code assigned at each infection was coded up to PCCF (Postal Code Conversion File) 2008.

7-Day Rule

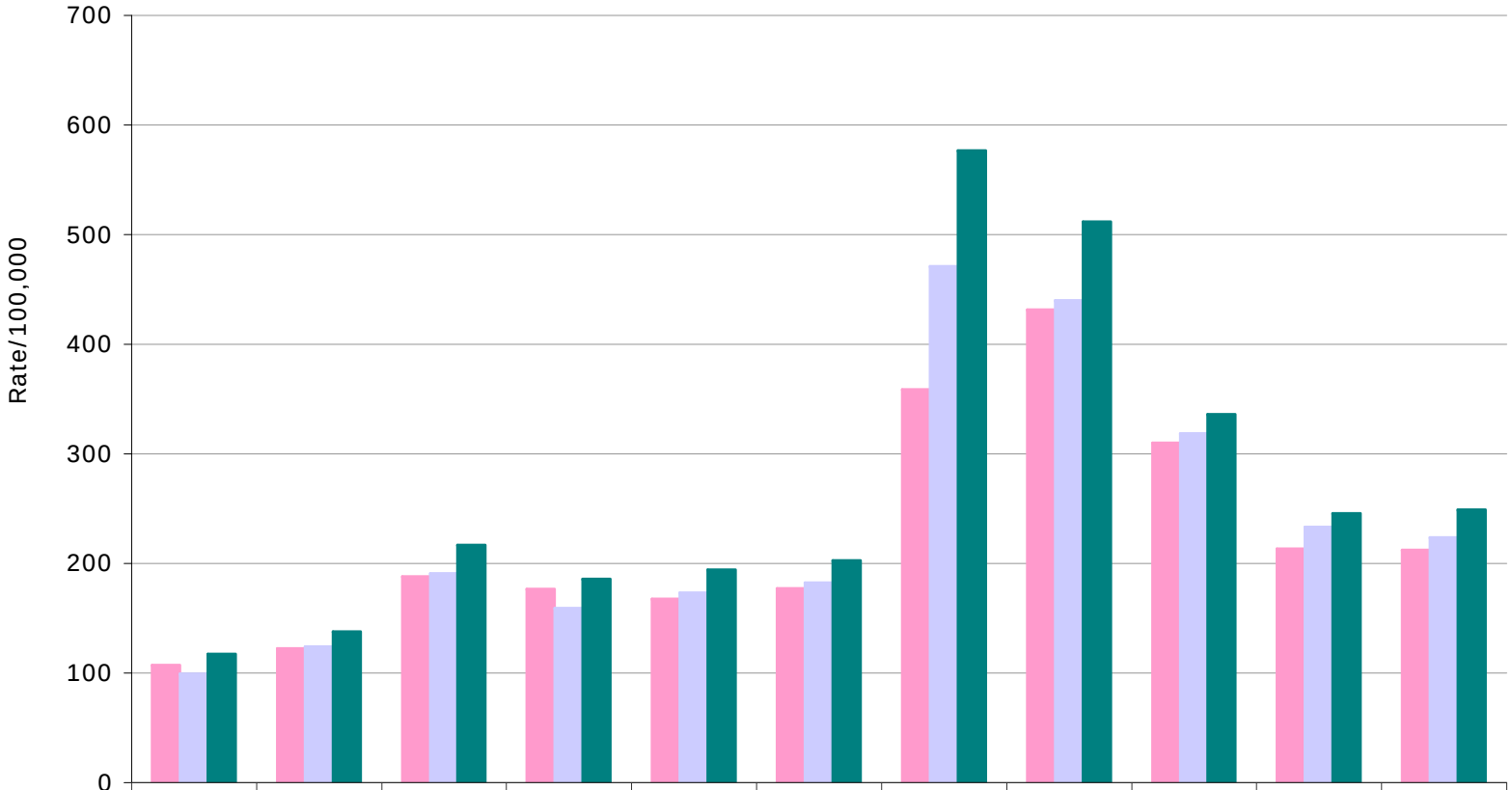
Adopting convention, any positive test occurring within 7 days of a previous positive test, for a particular infection, was treated as the same infection ("7-day rule"); subsequent infections within 7 days were excluded from further analyses.

Office of the Public Trustee

Postal codes for each infection were flagged if they corresponded with the postal code for the Office of the Public Trustee; no infections were flagged.

Cautionary Note: These surveillance data should be interpreted with caution, as rates are affected by multiple complex interacting variables including changing patterns of disease prevalence, testing rates, and testing accuracy over time. Due to different standardization methods and the choice of standard populations, adjusted rates may differ from other published reports.

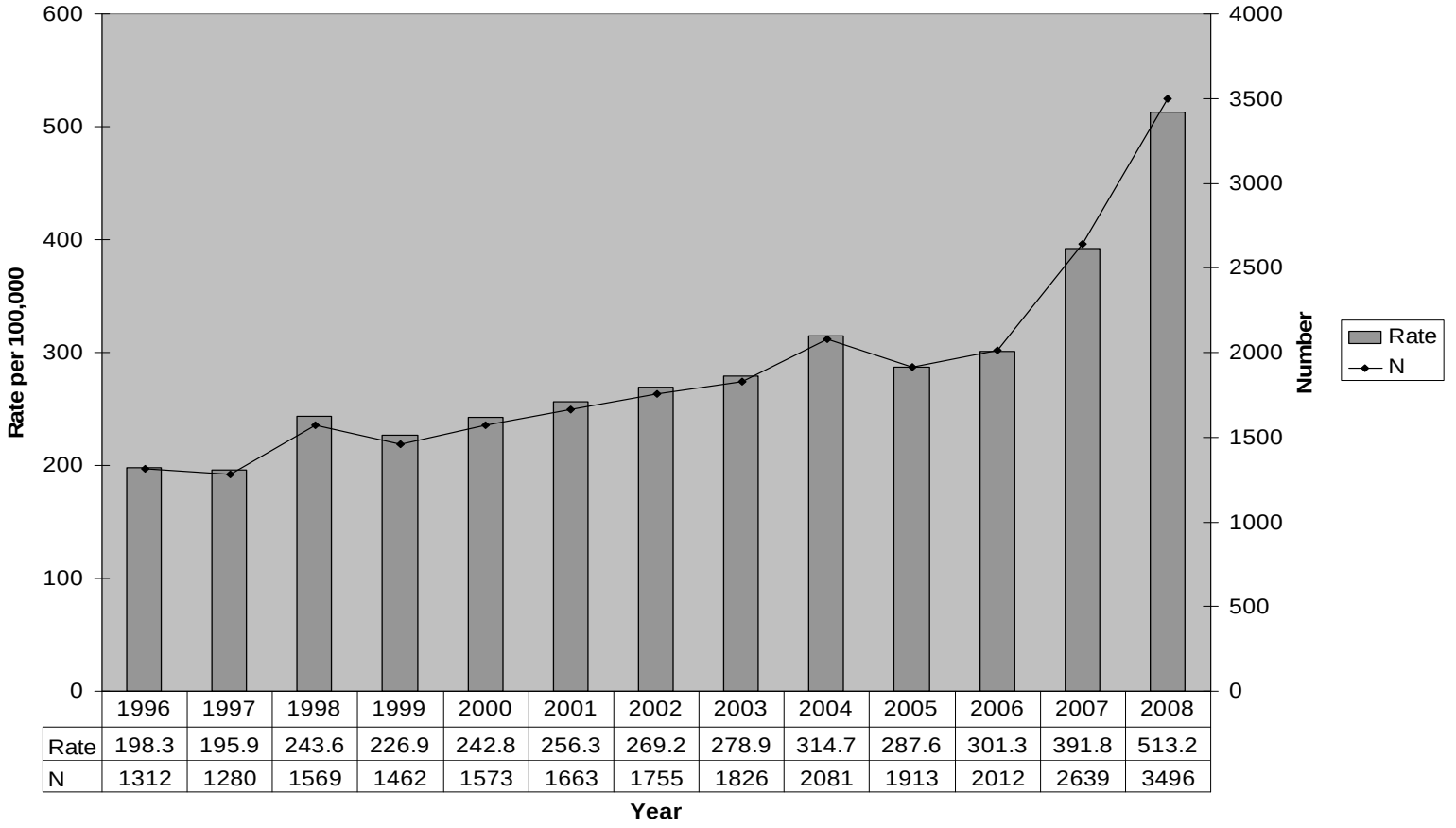
Chlamydia: Crude Rate of Infection by Province and Year



	NL	PE	NS	NB	QC	ON	MB	SK	AB	BC	CAN
2006	107.3	122.4	188.2	177.0	167.6	177.5	359.0	431.4	310.1	213.8	212.4
2007	99.3	124.5	191.0	159.2	173.7	182.3	471.0	440.1	318.8	233.3	224.0
2008	117.3	138.0	216.7	185.9	194.1	203.0	576.6	512.1	336.0	245.7	248.9

Data Source: Hepatitis C and STI Surveillance and Epidemiology Section, Community Acquired Infections Division, Public Health Agency of Canada, 2009 [downloaded May 2, 2010].

Age-adjusted Rates and Frequency of Chlamydia Infections, Total WHR by Year



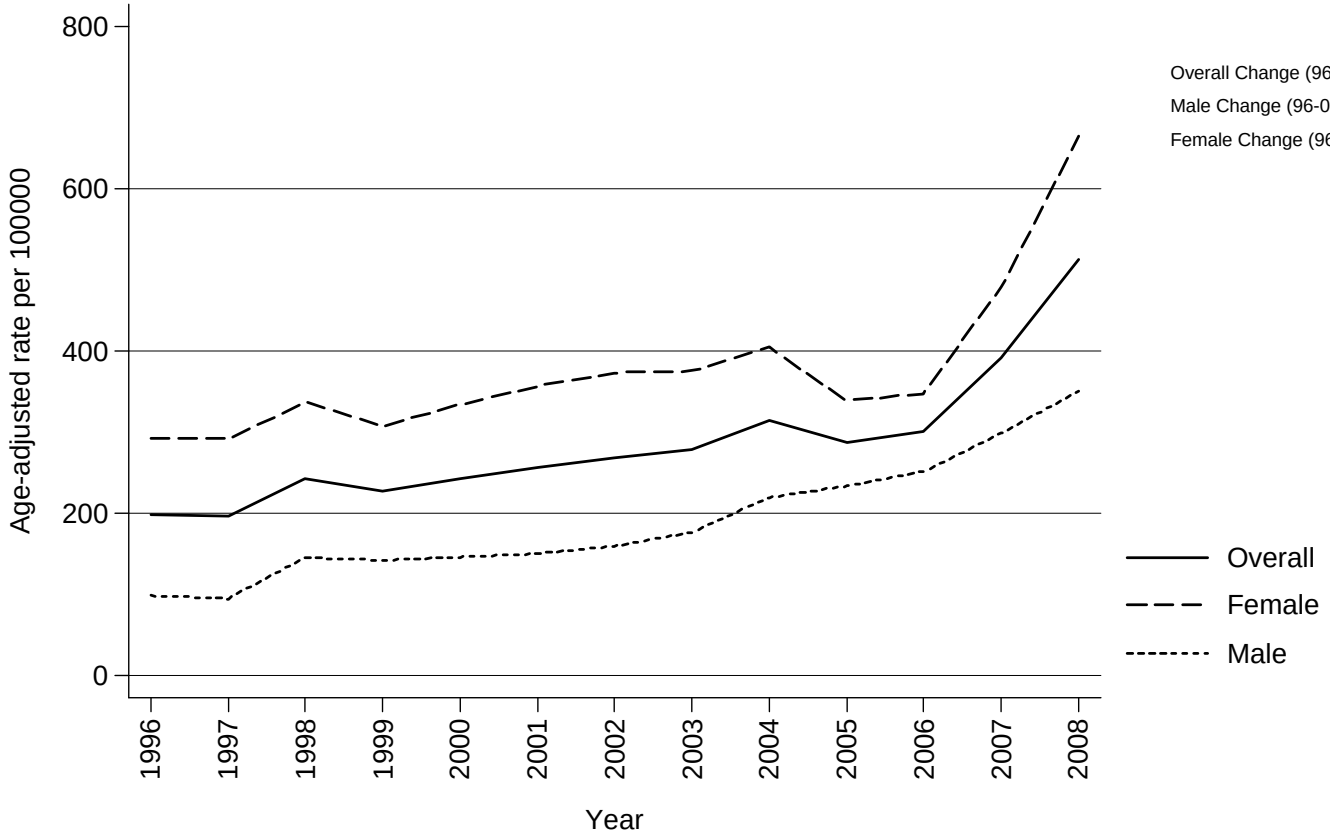
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Rate	198.3	195.9	243.6	226.9	242.8	256.3	269.2	278.9	314.7	287.6	301.3	391.8	513.2
N	1312	1280	1569	1462	1573	1663	1755	1826	2081	1913	2012	2639	3496

Year

All rates are based on number of infections per calendar year, and are age-adjusted to 2000 WRHA population

Data Source: Communicable Disease Control Branch, Public Health Division, Manitoba Health, April 2009.

Age-adjusted Rates of Chlamydia Infections, Total WHR by Year and Sex

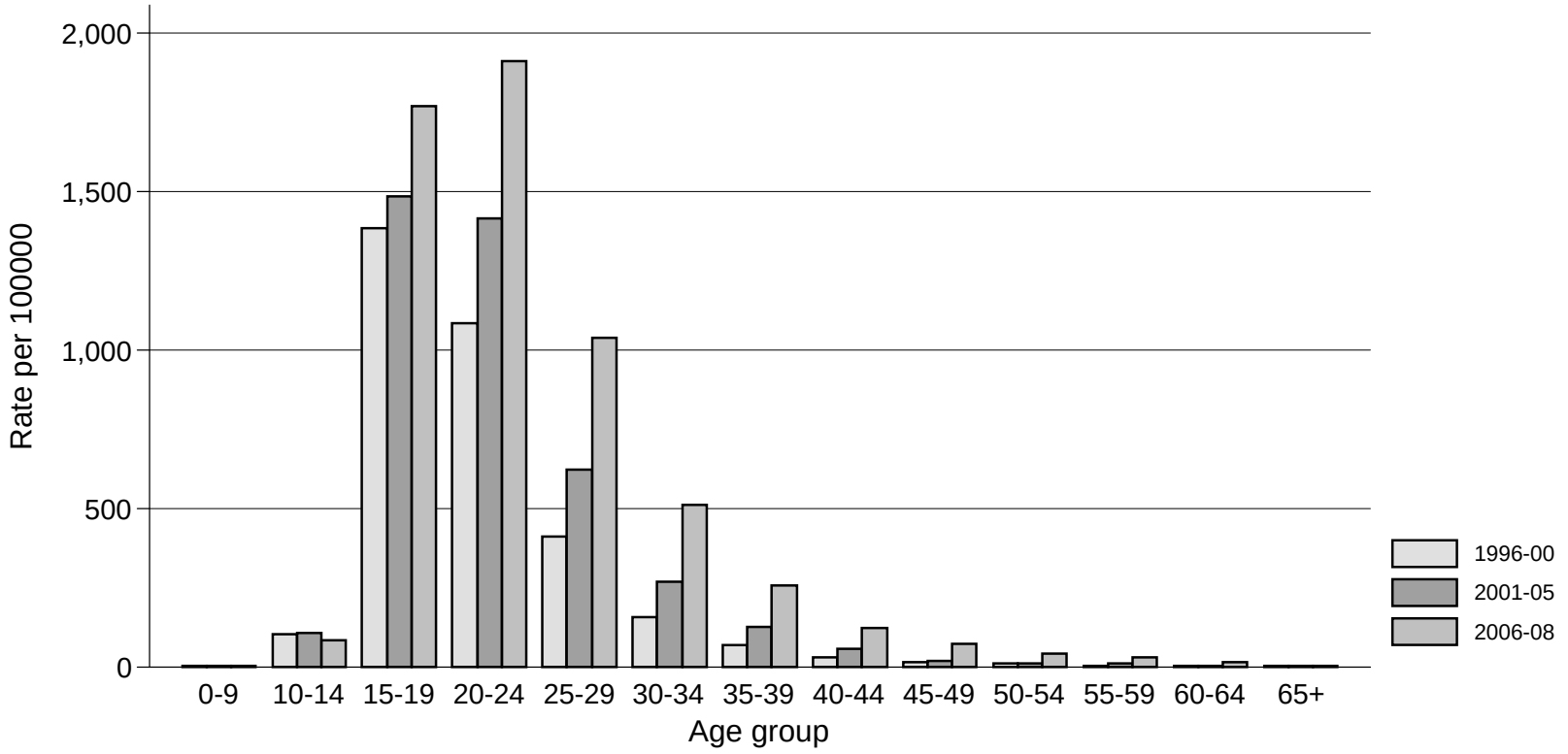


All rates are based on number of infections per calendar year, and are age-adjusted to 2000 WRHA population

Data Source: Communicable Disease Control Branch, Public Health Division, Manitoba Health, April 2009.

[a]Based on Poisson GEE model and adjusted for sex, age group, NC and year; [b]Based on Poisson GEE model and adjusted for age group, NC and year

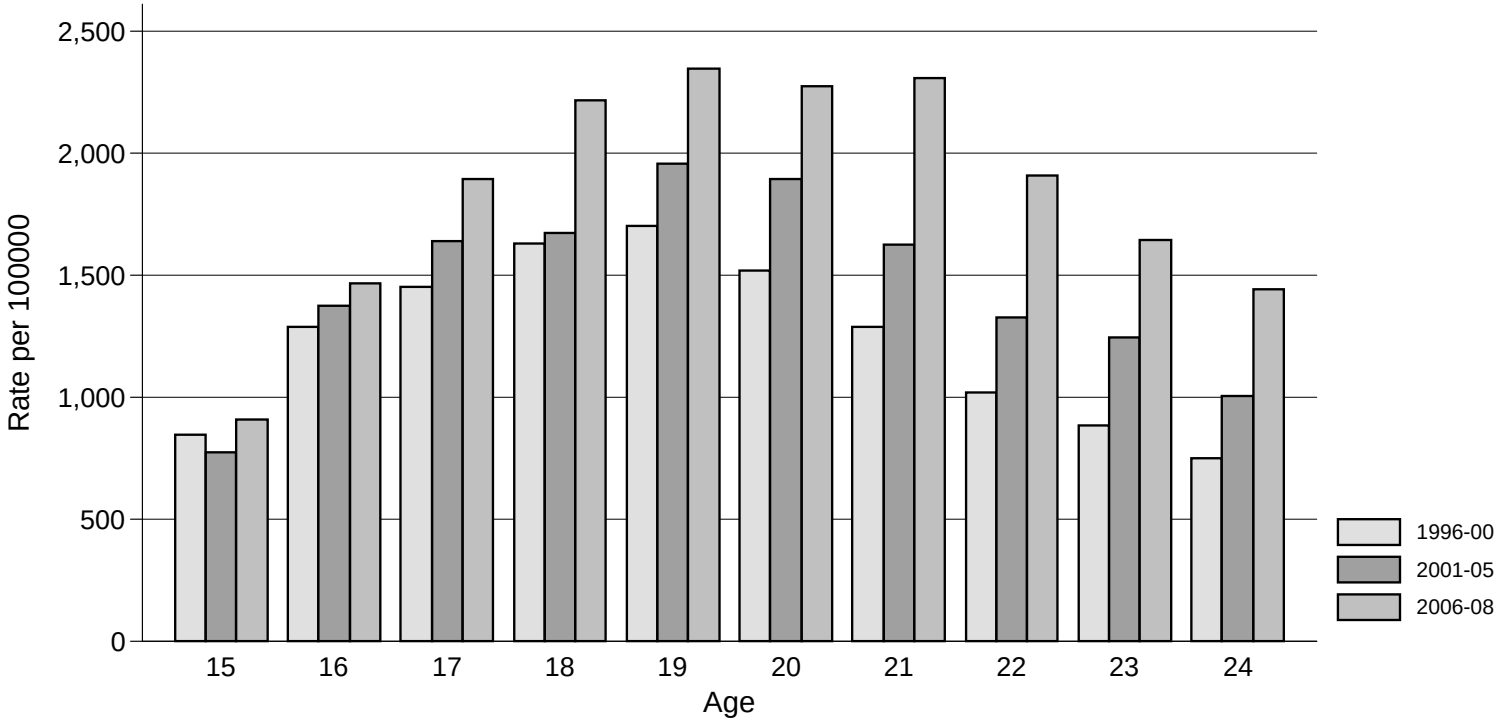
Annualized (1996-00,2001-05,2006-08) Age Group-Specific Rate of Chlamydia Infections, Total WHR by Age Group



All rates are based on number of infections per calendar year

Data Source: Communicable Disease Control Branch, Public Health Division, Manitoba Health, April 2009.

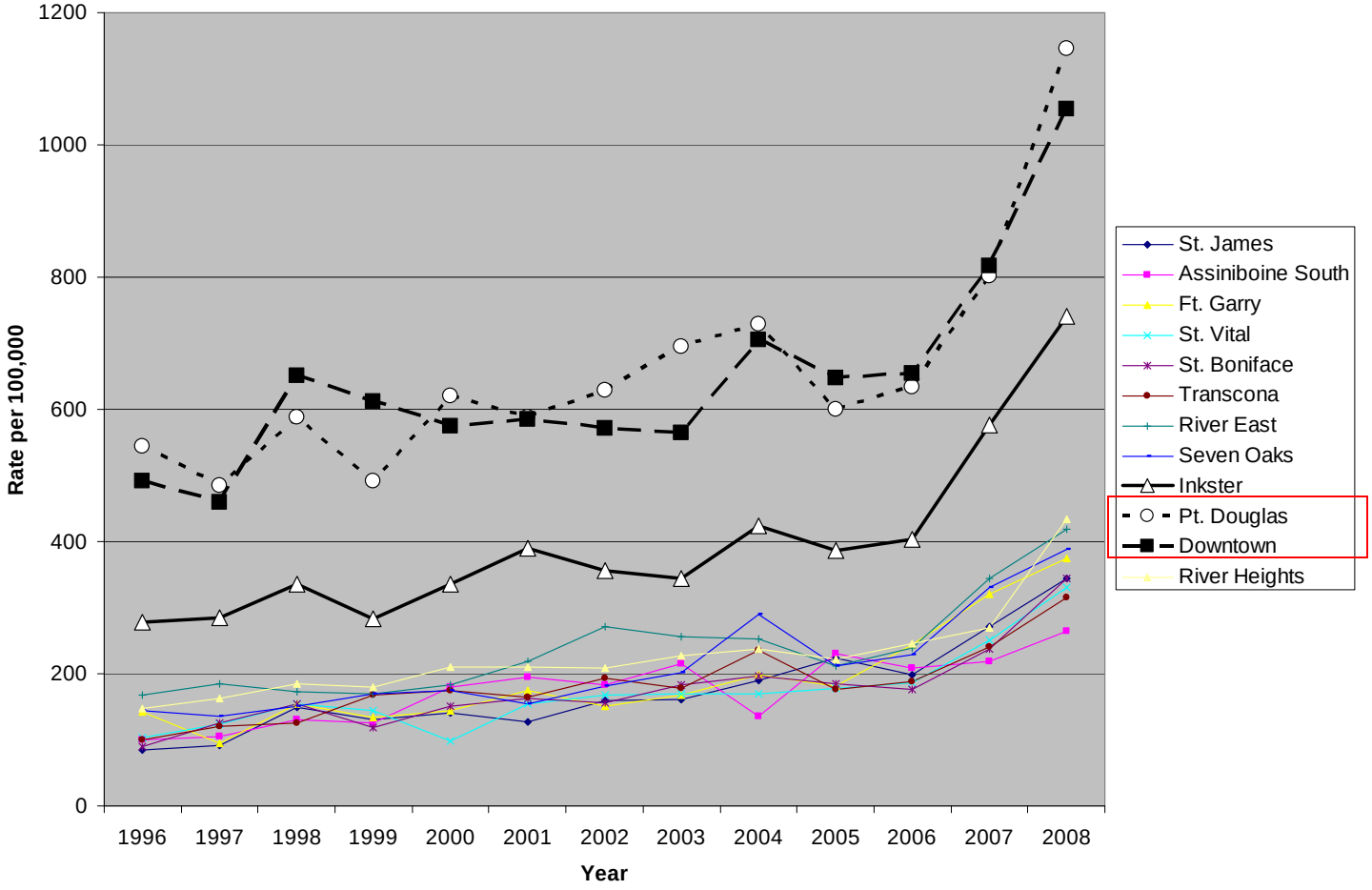
Annualized (1996-00,2001-05,2006-08) Age-Specific Rate of Chlamydia Infections, Total WHR, 15-24 years



All rates are based on number of infections per calendar year

Data Source: Communicable Disease Control Branch, Public Health Division, Manitoba Health, April 2009.

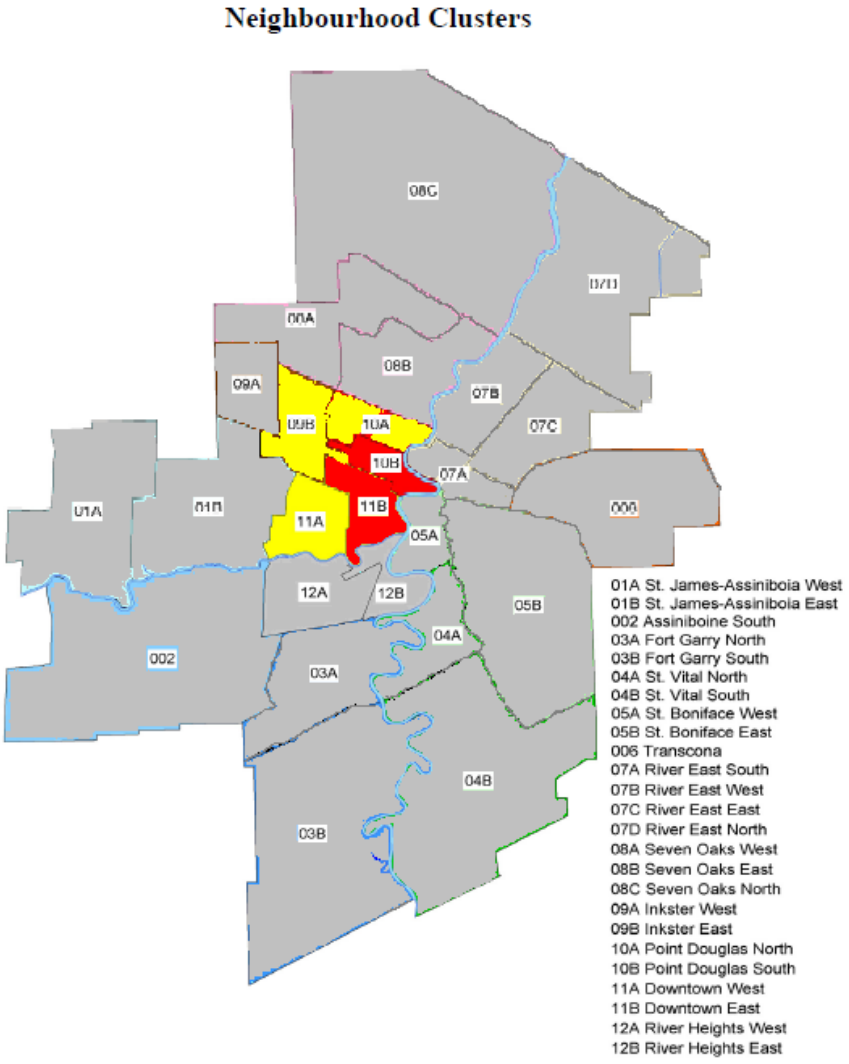
Age-adjusted Rates of Chlamydia Infections, Total WHR by Year and CA, 1996-2008



All rates are based on number of infections per calendar year, and are age-adjusted to 2000 WRHA population

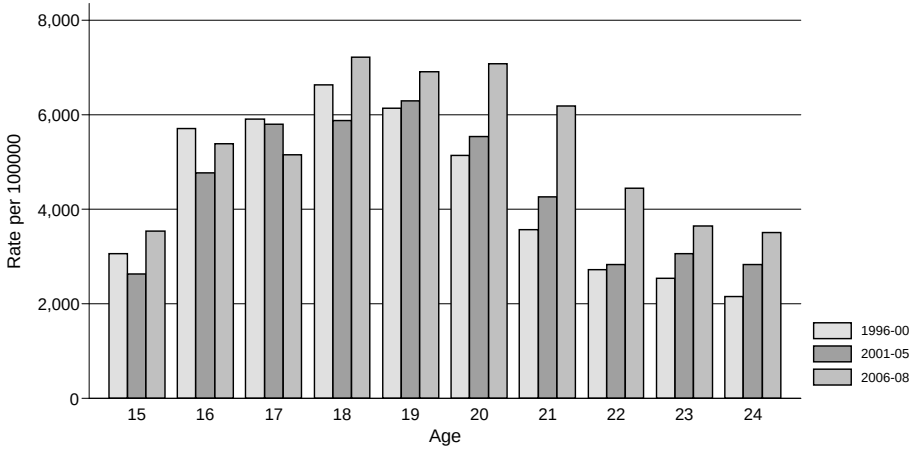
Data Source: Communicable Disease Control Branch, Public Health Division, Manitoba Health, April 2009.

Inner/Outer Core Areas and Rest of WHR

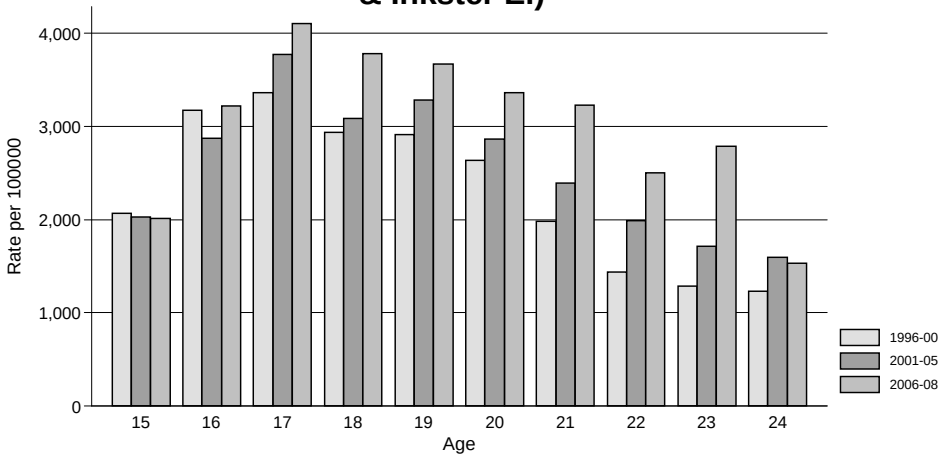


Annualized (1996-00,2001-05,2006-08) Age-Specific Rate of Chlamydia Infections, Core Areas and Rest of WHR, 15-24 years

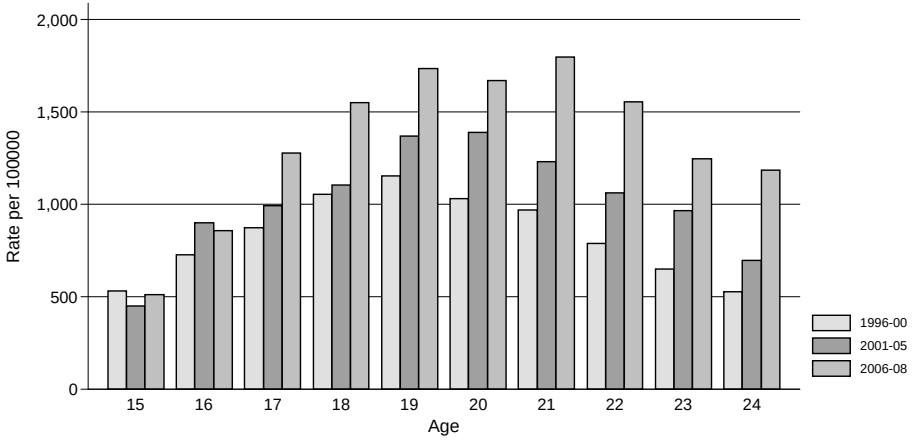
Inner Core (Pt. Douglas S & Downtown E.)



Outer Core (Pt. Douglas N, Downtown W. & Inkster E.)



Rest of WHR



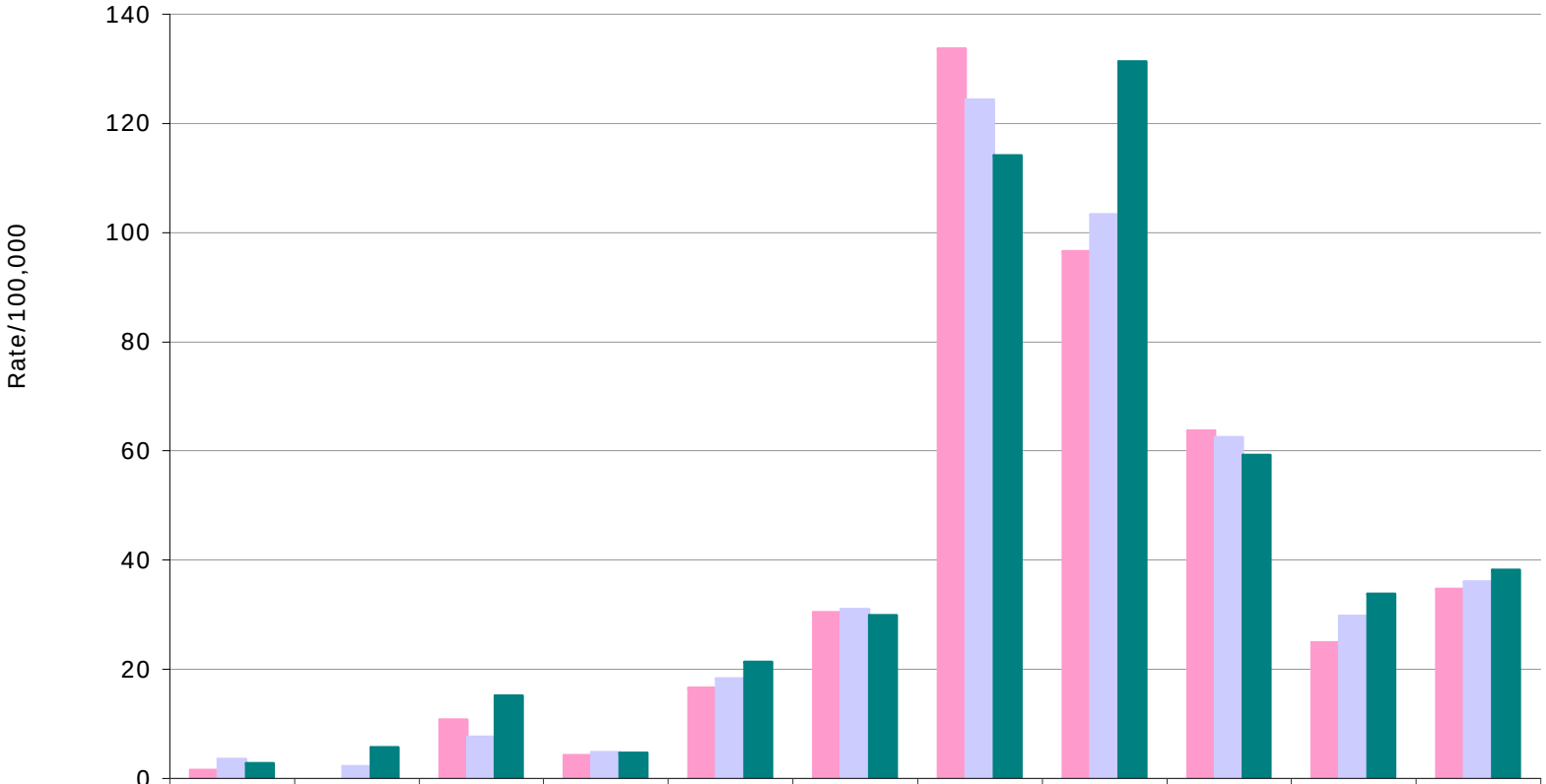
All rates are based on number of infections per calendar year

Data Source: Communicable Disease Control Branch, Public Health Division,

Manitoba Health, April 2009.

January 10, 2011

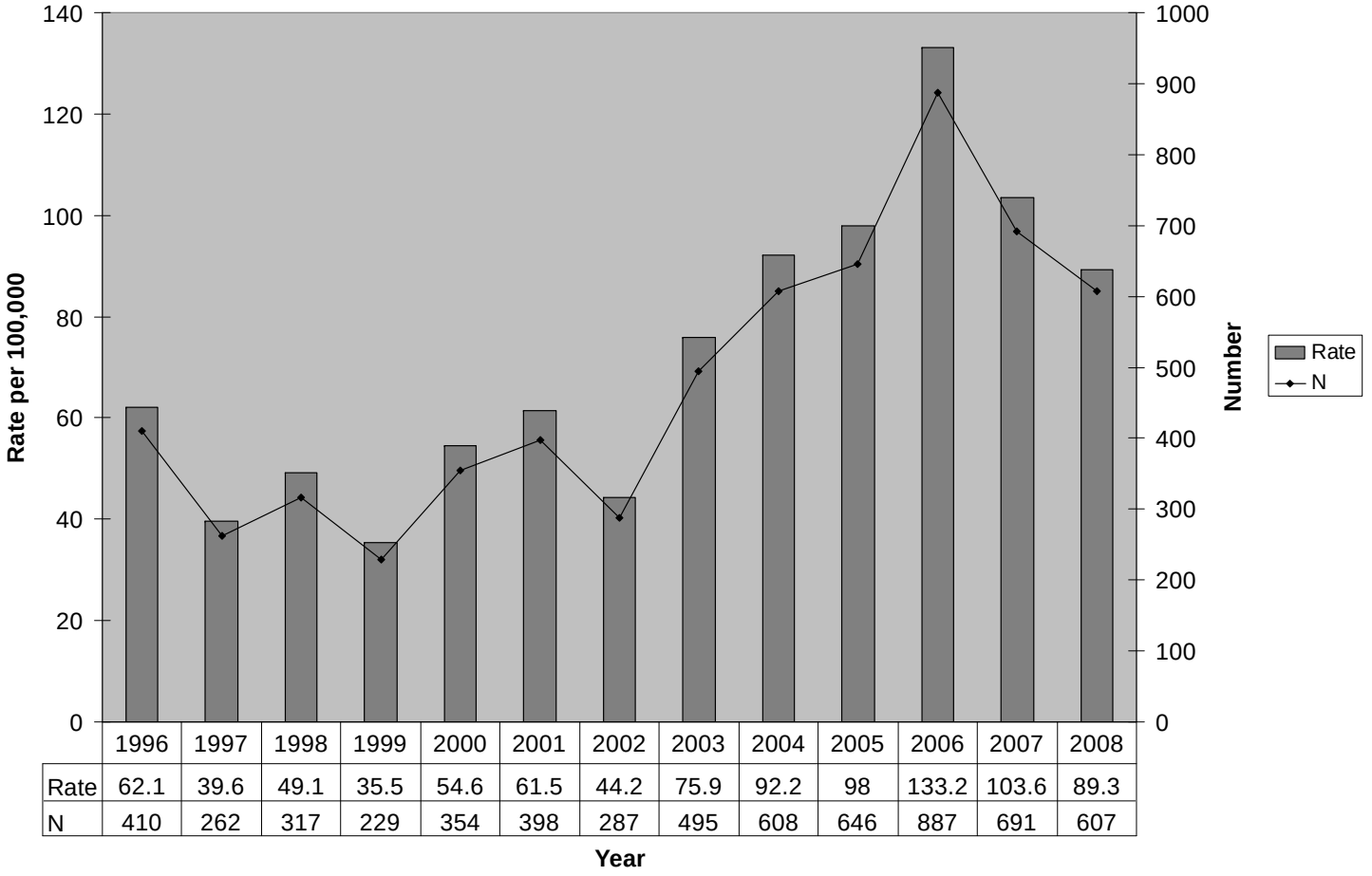
Gonorrhea: Crude Rate of Infection by Province and Year



	NL	PE	NS	NB	QC	ON	MB	SK	AB	BC	CAN
2006	1.6	0.0	10.8	4.3	16.6	30.5	133.7	96.6	63.8	25.0	34.7
2007	3.6	2.2	7.7	4.8	18.3	31.0	124.4	103.3	62.5	29.8	36.1
2008	2.8	5.7	15.2	4.7	21.4	29.9	114.1	131.3	59.3	33.9	38.2

Data Source: Hepatitis C and STI Surveillance and Epidemiology Section, Community Acquired Infections Division, Public Health Agency of Canada, 2009 [downloaded May 2, 2010].

Age-adjusted Rates and Frequency of Gonorrhea Infections, Total WHR by Year



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Rate	62.1	39.6	49.1	35.5	54.6	61.5	44.2	75.9	92.2	98	133.2	103.6	89.3
N	410	262	317	229	354	398	287	495	608	646	887	691	607

All rates are based on number of infections per calendar year, and are age-adjusted to 2000 WRHA population

Data Source: Communicable Disease Control Branch, Public Health Division, Manitoba Health, April 2009.

Age-adjusted Rates of Gonorrhea Infections, Total WHR by Year and Sex

Overall Change (96-06): +11%/yr[a]

Male Change (96-06): +13%/yr[b,c]

Female Change (96-06): +8%/yr[b,c]

Overall Change (06-08): -19%/yr[a]
Male Change (06-08): -28%/yr[b]
Female Change (06-08): -7%/yr[b]

Overall
Female
Male

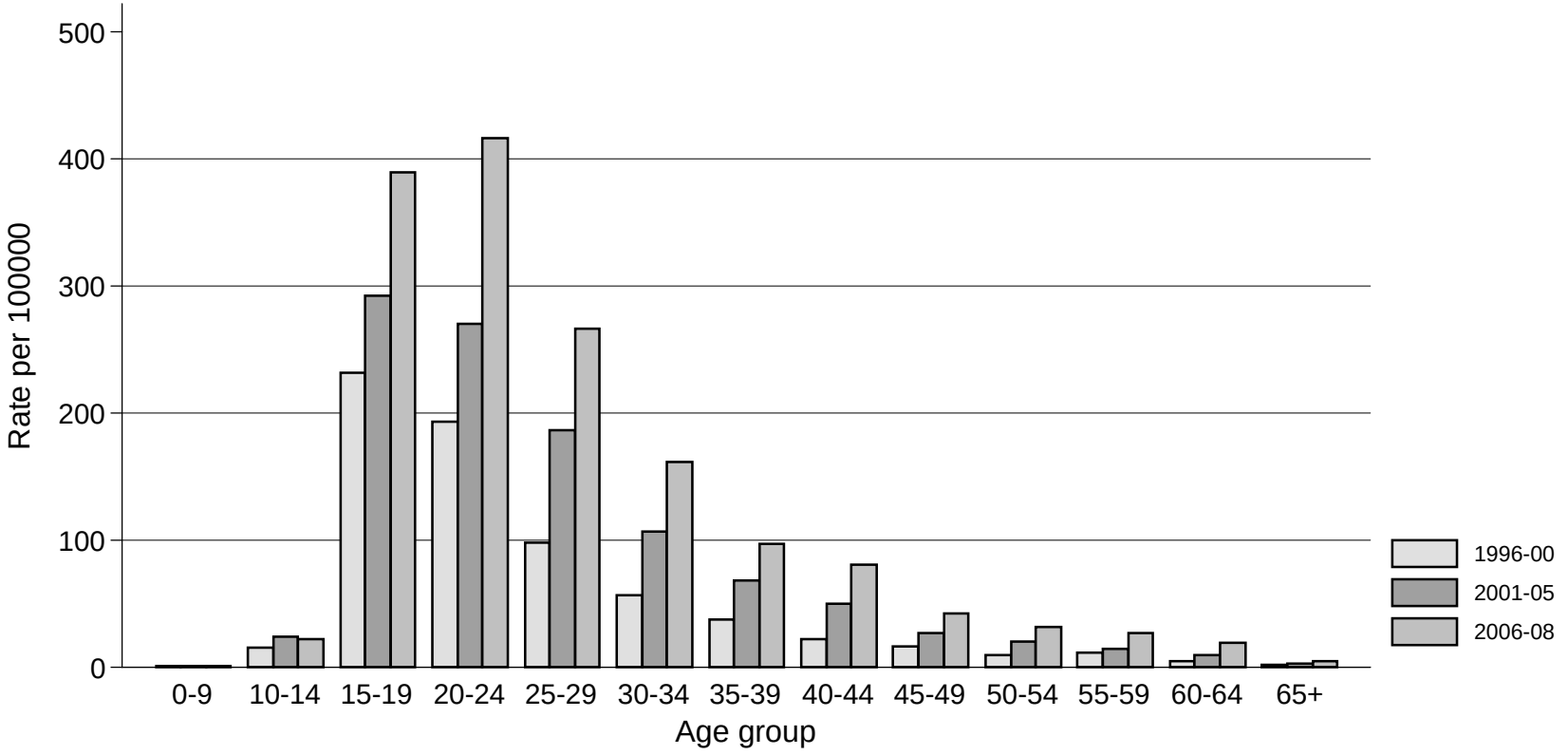
All rates are based on number of infections per calendar year, and are age-adjusted to 2000 WRHA population

Data Source: Communicable Disease Control Branch, Public Health Division, Manitoba Health, April 2009.

[a]Based on Poisson GEE model and adjusted for sex, age group, NC and year; [b]Based on Poisson GEE model and adjusted for age group, NC and year

cEstimates unstable

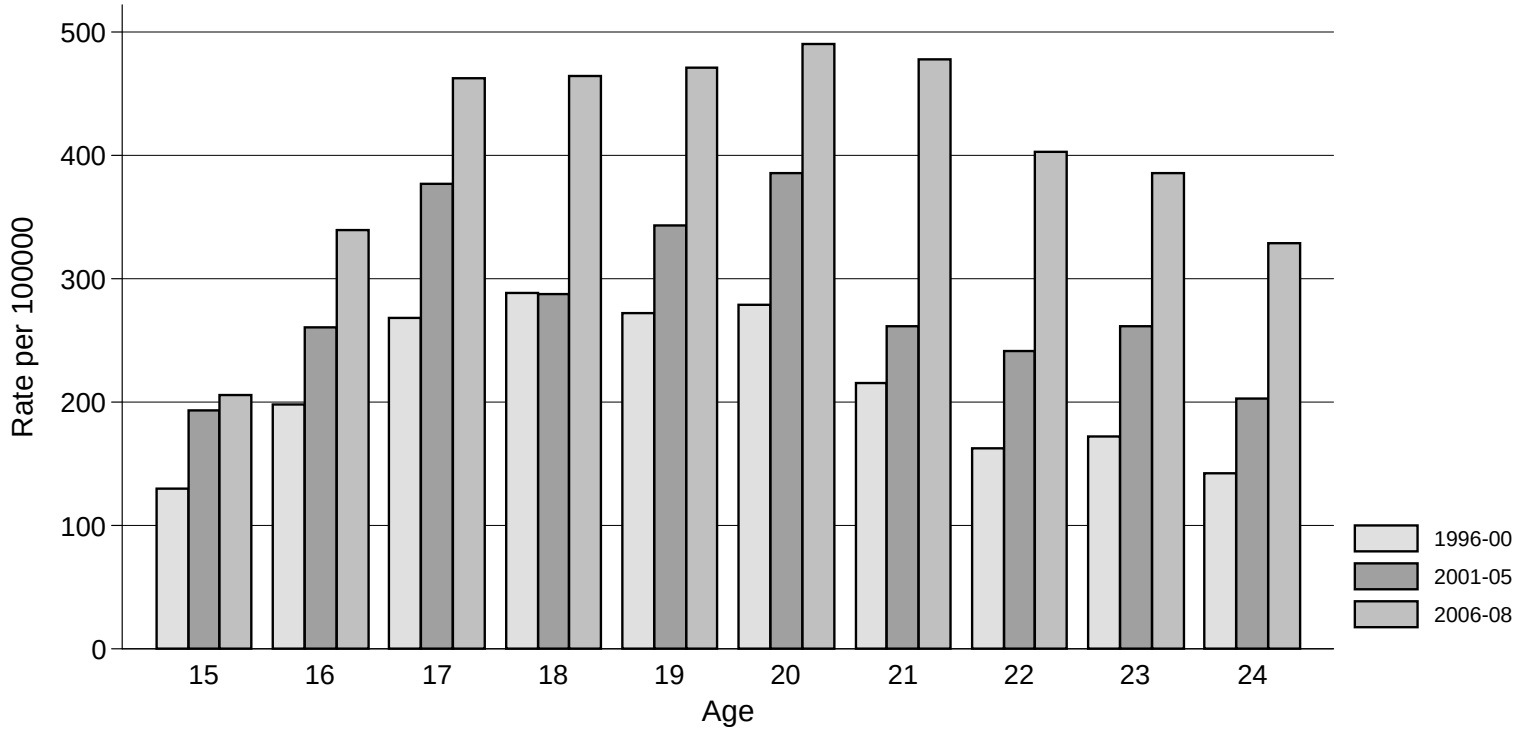
Annualized (1996-00,2001-05,2006-08) Age Group-Specific Rate of Gonorrhea Infections, Total WHR by Age Group



All rates are based on number of infections per calendar year

Data Source: Communicable Disease Control Branch, Public Health Division, Manitoba Health, April 2009.

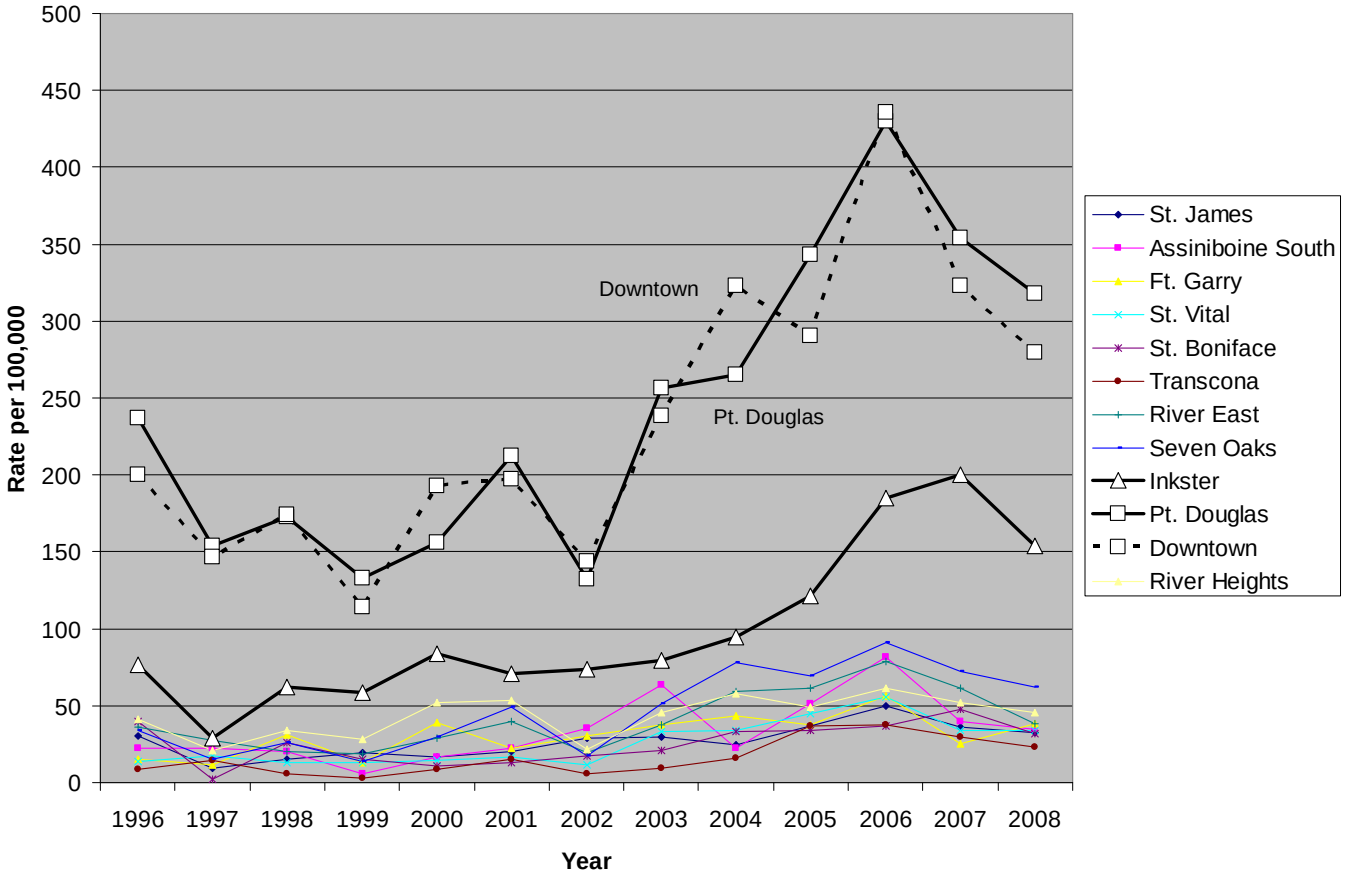
Annualized (1996-00,2001-05,2006-08) Age-Specific Rate of Gonorrhea Infections, Total WHR, 15-24 years



All rates are based on number of infections per calendar year

Data Source: Communicable Disease Control Branch, Public Health Division, Manitoba Health, April 2009.

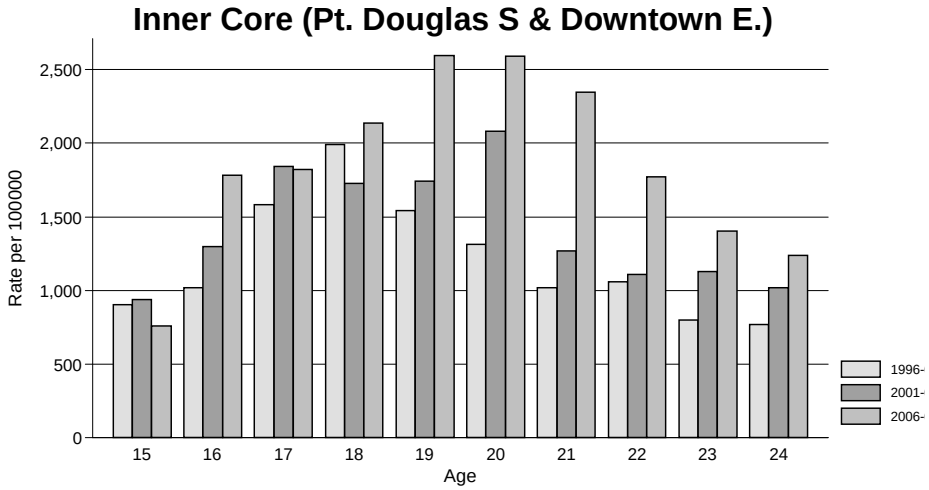
Age-adjusted Rates of Gonorrhea Infections, Total WHR by Year and CA, 1996-2008

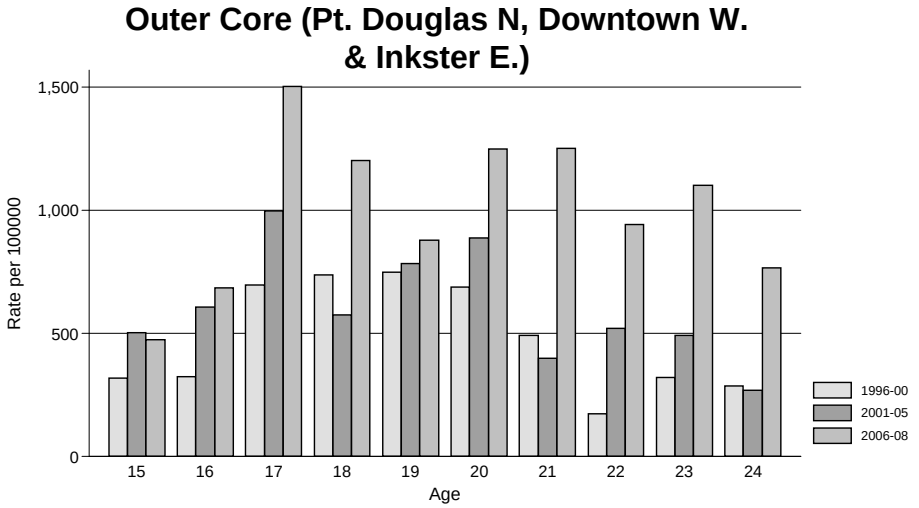


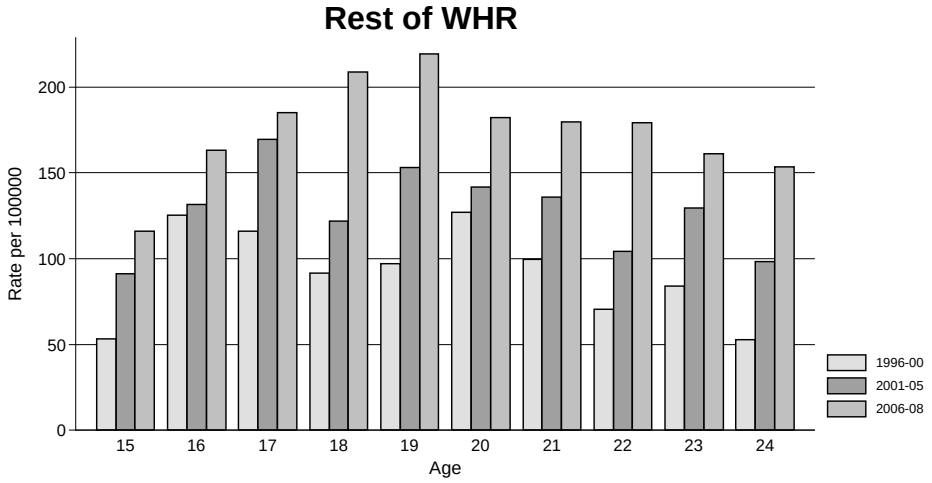
All rates are based on number of infections per calendar year, and are age-adjusted to 2000 WRHA population

Data Source: Communicable Disease Control Branch, Public Health Division, Manitoba Health, April 2009.

Annualized (1996-00,2001-05,2006-08) Age-Specific Rate of Gonorrhea Infections, Core Areas and Rest of WHR, 15-24 years







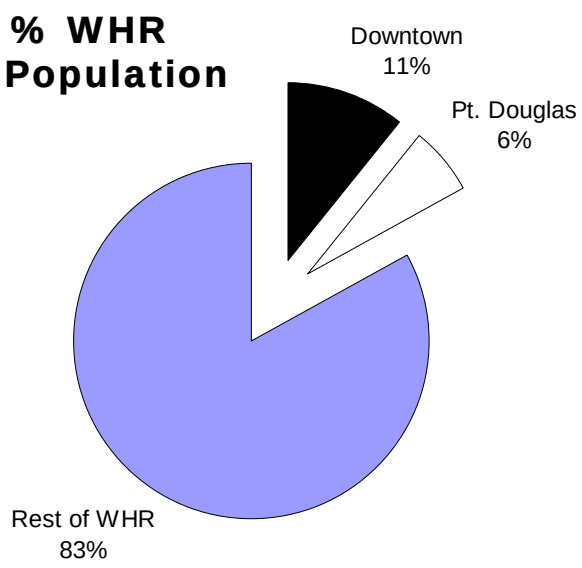
All rates are based on number of infections per calendar year

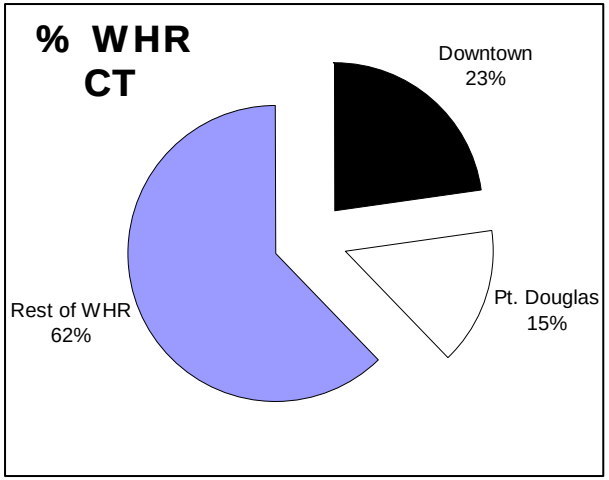
Data Source: Communicable Disease Control Branch, Public Health Division,

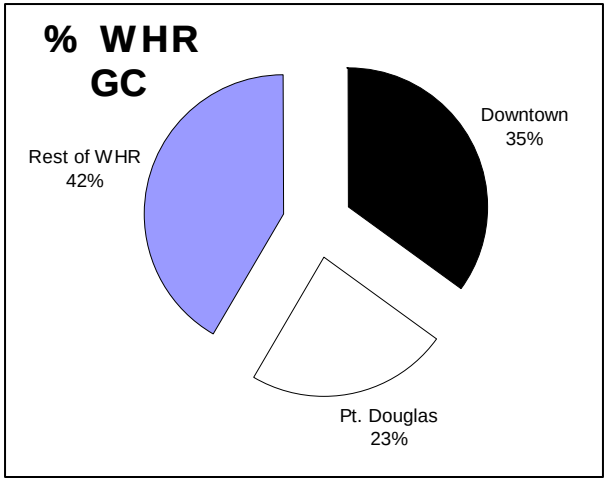
Manitoba Health, April 2009.

January 10, 2011

Disproportionate Burden: Chlamydia (CT) and Gonorrhea (GC) Infections, Pt. Douglas and Downtown Community Areas (2008)







Chlamydia and Gonorrhea - Summary

- **Rates of chlamydia increasing, esp younger women**
  - **higher numbers tested due to ease of new urine testing (precluding speculum examination/cervical swabs and penile swabs)**
  - **better test accuracy since the introduction of PCR testing in 2005**
  - **possible true increase in the prevalence of chlamydia infections (with spread outside of traditional "core" populations)**
- **Rates of gonorrhea decreasing, primarily in men**
  - **more testing is taking place due to the ease of urine testing (in men and women) and test accuracy has increased**
  - **possible true decrease in the incidence and prevalence of gonorrhea infections?**
- **A male/female gap most pronounced in 15-19 year olds (both CT and GC) and 20-24 year olds (CT), with higher rates of infection in women suggests a significant large cohort of untested male asymptomatic "carriers".**

Infectious Syphilis

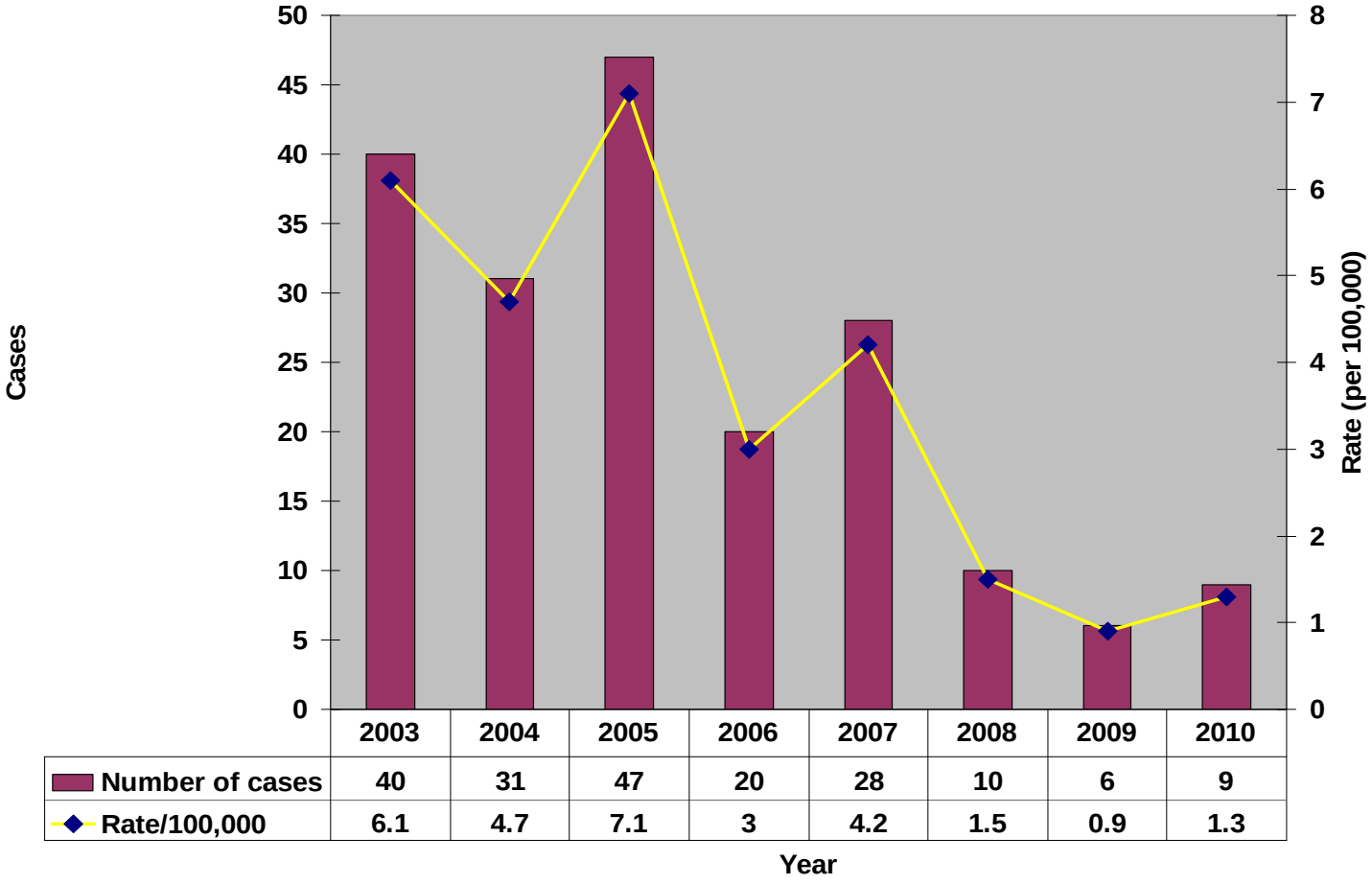
Case definitions and case reporting

In Manitoba, all confirmed cases of syphilis are reportable by laboratories and attending health care professionals to the chief public health officer at Manitoba Health. Provincial case definitions and protocols guide laboratory testing, diagnosis, treatment and public health management. Infectious syphilis is defined as primary, secondary, early latent or incubating. Non-infectious syphilis (defined as late latent syphilis, tertiary syphilis, neurosyphilis) is not reportable and not a risk of transmission to the general population, and hence is not included in this surveillance report.

Data collection and management

In collaboration with Manitoba Health, a surveillance system for infectious syphilis was established within the Winnipeg Regional Health Authority in January 2003, at the onset of an outbreak of locally-acquired infectious syphilis. For each case, a Public Health Nurse completes a standardized surveillance form as part of routine public health follow-up; and this information is entered into a surveillance database. Regional data were extracted from the surveillance database (February 2011) based on client's residence (at the time of testing). Specimen collection date was used to define the year for which cases were assigned.

Infectious Syphilis: Crude Incidence, by Year, Winnipeg Health Region, Jan 2003 to December 2010



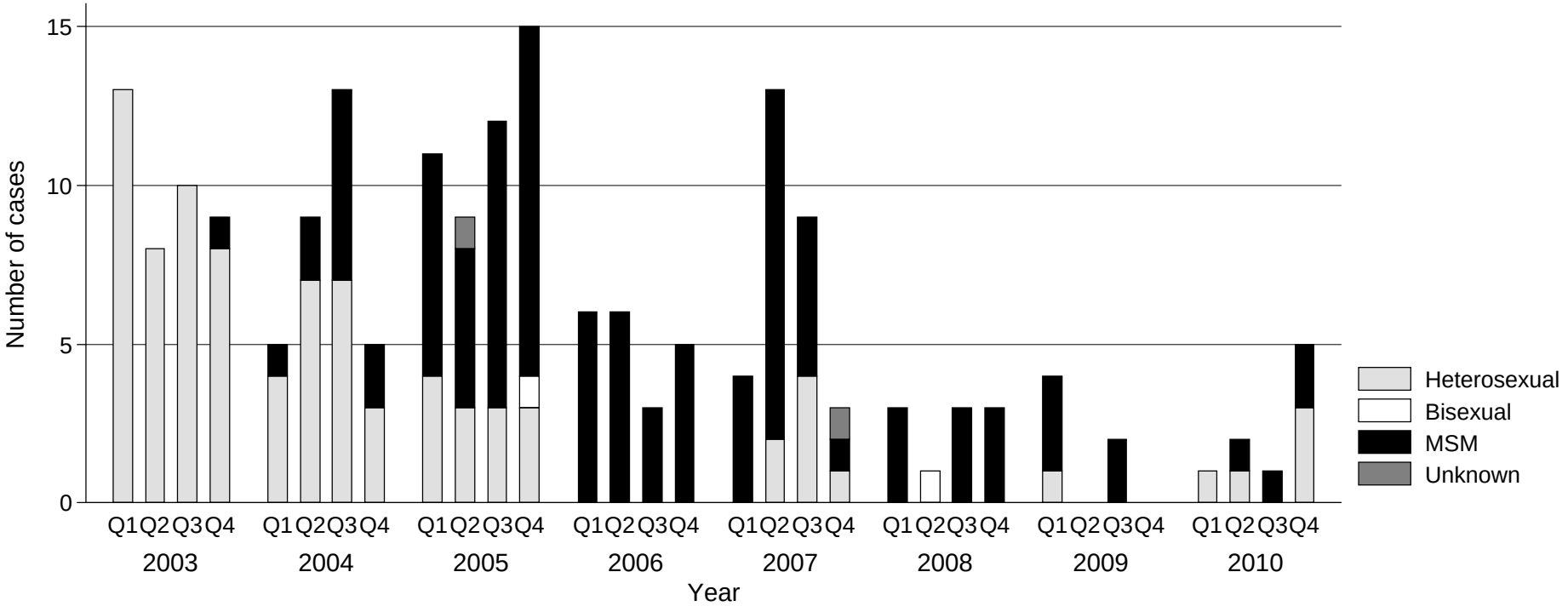
	2003	2004	2005	2006	2007	2008	2009	2010
Number of cases	40	31	47	20	28	10	6	9
Rate/100,000	6.1	4.7	7.1	3	4.2	1.5	0.9	1.3

N=191

Data Source: Infectious syphilis surveillance database.

PPH Program, Winnipeg Regional Health Authority, February 2011

Infectious Syphilis: Number of reported cases by quarter and year, Winnipeg Health Region, Jan 2003 to December 2010



N=193

Data Source: Infectious syphilis surveillance database.

PPH Program, Winnipeg Regional Health Authority, February 2011

Infectious Syphilis - Summary

- **Two outbreaks of locally transmitted infectious syphilis documented in the Winnipeg Health Region between 2003 and 2008**
  - **first outbreak occurred in 2003-2005 involving primarily heterosexual transmission associated with meeting in downtown bars and heavy use of alcohol**
  - **second outbreak occurred in 2004-2008 involving primarily men who have sex with men (MSM) frequenting bath houses**
- **Most recent cases of infectious syphilis cases in 2009 and 2010 are sporadic, mostly imported cases with limited to no known local transmission**
- **Continued importation of sporadic infectious syphilis cases expected to occur as several North American urban centres continue to have large syphilis outbreaks**

Human Immunodeficiency Virus (HIV)

Case definitions and case reporting

In Manitoba, confirmatory HIV antibody testing in Manitoba is performed by Cadham Provincial Laboratory (CPL). Confirmed cases of HIV are reportable by laboratories and attending health care professionals to the chief public health officer at Manitoba Health. Provincial case definitions and protocols guide laboratory testing, diagnosis, treatment and public health management. HIV testing includes both nominal (effective January 2008) and non-nominal testing options. Additionally, effective June 2010, CPL enhanced their laboratory testing to perform HIV antibody testing on clients with viral load testing who do not have a positive antibody result in the provincial laboratory information management system (LIMS).

Data collection and management

Manitoba Health sends HIV referrals to the region of testing. All 2010 HIV positive referrals sent to Winnipeg Regional Health Authority (WRHA) Public Health were reviewed. If the client had previously tested positive prior to 2010, the individual was considered a known HIV case. Referrals from Citizenship and Immigration Canada (CIC) were considered as known or previously diagnosed cases of HIV. A 2010 HIV case (new to Public Health) was defined as a client with no known positive HIV result prior to 2010 and a positive specimen collection date within calendar year 2010.

HIV: Number of Positive Cases Referred by Manitoba Health to WRHA Public Health, 2010

HIV cases tested in the Winnipeg Health Region (WHR)	#	%
New 2009 HIV case*	1	0.7%
New 2010 HIV Case (Out of Region)	6	4.4%
New 2010 HIV Case (WHR)**	60	43.8%
New 2010 HIV Case- Testing History Unknown (WHR)	6	4.4%
New 2010 HIV Case- Testing History Unknown (Out of Region)	1	0.7%
Previously Tested Positive***	62	45.3%
Did Not Meet Case Definition****	1	0.7%
TOTAL	137	100.0%

*Referral sent in 2010, but specimen collection date in 2009

**3 clients tested non-nominally and nominally but counted once

***1 client tested non-nominally and nominally but counted once

****Infant tested by antibody test only

66 new HIV WHR cases in 2010 (60 new HIV cases and 6 new HIV cases with testing history unknown)

Data Source: HIV Database, Population and Public Health, WRHA, March 2011

Regional HIV Overview: New HIV Cases in Winnipeg Residents, 2010

Age and Gender of New WHR HIV Cases, 2010 (N=66)

Demographics	#	%	Rate per 100,000
Age Group			
0	1	1.5	-
1-14	1	1.5	-
15-24	9	13.6	-
25-34	16	24.2	-
35-44	23	34.8	-
45-64	15	22.7	-
65+	1	1.5	-
Sex			
Female	20	30.3	5.8
Male	46	69.7	13.9

Mean Age: 37.1 yrs
Median Age: 38 yrs
Range: 0-80 yrs
Interquartile Range: 28-44

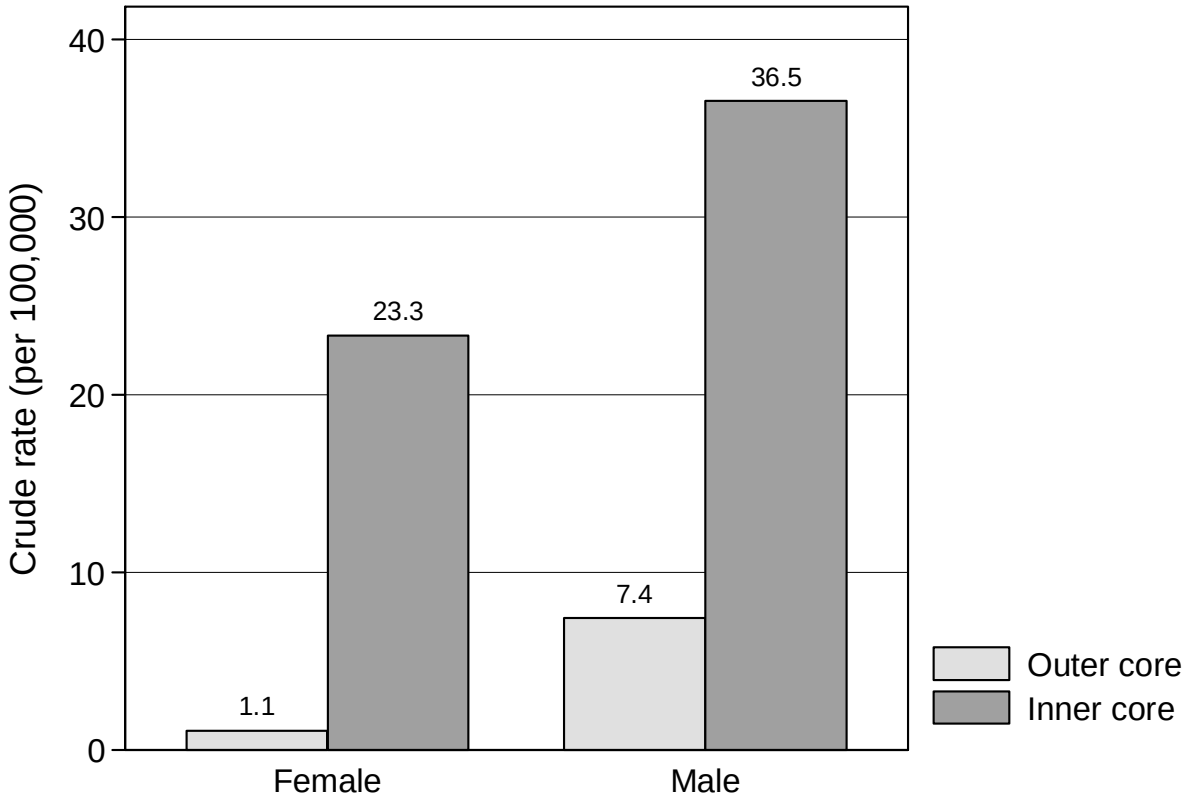
Data Source: HIV Database, Population and Public Health, WRHA, March 2011

Regional HIV Overview: New HIV Cases in Winnipeg Residents by Age group, Sex and Ethnicity, 2010

Age group at time of specimen collection date	Caucasian			Black			Asian			Aboriginal			Unknown / Missing			Total		
	F	M	Total	F	M	Total	F	M	Total	F	M	Total	F	M	Total	F	M	Total
0										1		1				**1**		**1**
1-14					1	1											**1**	**1**
15-24	1	2	3							1	5	6				**2**	**7**	**9**
25-34	1	3	4		2	2				6	2	8		2	2	**7**	**9**	**16**
35-44	1	8	9	3	1	4				2	5	7	2	1	3	**8**	**15**	**23**
45-64		8	8		1	1		2	2	1	2	3	1		1	**2**	**13**	**15**
65+		1	1														**1**	**1**
TOTAL	**3**	**22**	**25**	**3**	**5**	**8**		**2**	**2**	**11**	**14**	**25**	**3**	**3**	**6**	**20**	**46**	**66**

Data Source: HIV Database, Population and Public Health, WRHA, March 2011

Crude Rates of New HIV Cases in Winnipeg Residents by Inner vs. Outer Core* and Sex, 2010



*** Inner Core: Downtown, Inkster and Pt. Douglas Community Areas; rates calculated using WHR 2008 population as the denominator; Assignment of CA is based on postal code**

Data Source: HIV Database, Population and Public Health, WRHA, March 2011

HIV - Summary

- **Overall HIV case numbers in the Winnipeg Health Region have remained stable for the past decade**
- **Chart audits in 2009/2010 have identified a significant number of duplicate HIV testing, reducing the total number of annually reported "new" cases by up to 50%**
- **A significant number of new HIV cases are being identified in core-area young aboriginal persons; requires ongoing investigation and follow up preventive interventions**