PublicHealth
WELLINGTON-DUFFERIN-GUELPH
Stay Well.

Trends in Reported Sexually Transmitted Infections in Wellington-Dufferin-Guelph 2022

To:	Chair and Members of the Board of Health
Meeting Date:	March 2, 2022
Report No.	**BH.01.MAR0222.R04** Pages: 16
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Submitted By & Signature:	*Original signed document on file* _____ **Dr. Nicola J. Mercer, MD, MBA, MPH, FRCPC** **Medical Officer of Health & CEO**

Recommendations

It is recommended that the Board of Health:

1. Receive this report for information.

Key Points

- There has been a marked decrease in the annual rates of reported chlamydial infections and gonorrhea in Ontario since early 2020, when pandemic measures were first instituted, with this being mirrored in local trends of chlamydial infections in the Wellington-Dufferin-Guelph (WDG) region.
- Reported gonorrhea infections decreased in WDG in 2020 but rebounded in 2021 to the levels seen in 2019, with most of the reported cases continuing to occur in men.

- Similar marked deceases have not been seen for reported cases of infectious syphilis in Ontario or in WDG, although the small number of cases reported locally makes it difficult to accurately assess trends over time. The continuing tendency for cases to be older and male reflects the trend in North America, over the past few years of infectious syphilis emerging among men who have sex with men (MSM).[1]
- The decreases in chlamydial infection and gonorrhea seen in 2020 and 2021 could be due to decreased access to and use of sexual health services and testing in Ontario during the COVID-19 pandemic, which has been reported in other regions of North America.[2,3,4] Whether the trend also partly reflects fewer opportunities for transmission of chlamydial infections due to decreased interpersonal contact during lockdowns is currently unknown.
- During the COVID-19 pandemic, sexual health services at Wellington-Dufferin-Guelph Public Health (WDGPH) have been suspended. Clients have been referred to their primary care provider, walk-in clinics, or to ARCH. Testing for sexually transmitted infections will resume at WDGPH in late February and early March 2022.
- Reduced access to primary care and WDGPH sexual health services may have resulted in under-diagnosis and therefore under-reporting of STIs in the community.[5] Rates shown in this report for 2020 and 2021 may therefore be under-estimates of true levels of infections during these years.

Data presented here inform sexual health services delivered by the Clinical Services team.

Discussion

Chlamydia

Chlamydia is a bacterial infection spread through vaginal, anal, or oral sex.[6] Most individuals with chlamydia have no symptoms, though the infection can cause pain during urination and discharge from the penis or vagina. Complications include pelvic infections, which can cause infertility or chronic pelvic pain.[7] Chlamydia can be tested with urine specimens, cervical swabs, rectal swabs, and/or throat swabs. Positive test results are reported to Wellington-Dufferin-Guelph Public Health (WDGPH). Safer sex practices (such as condom use) reduce the risk of transmission. Chlamydia infections can be treated with antibiotics, though a person who has been treated may be re-infected if they are exposed again.[7]

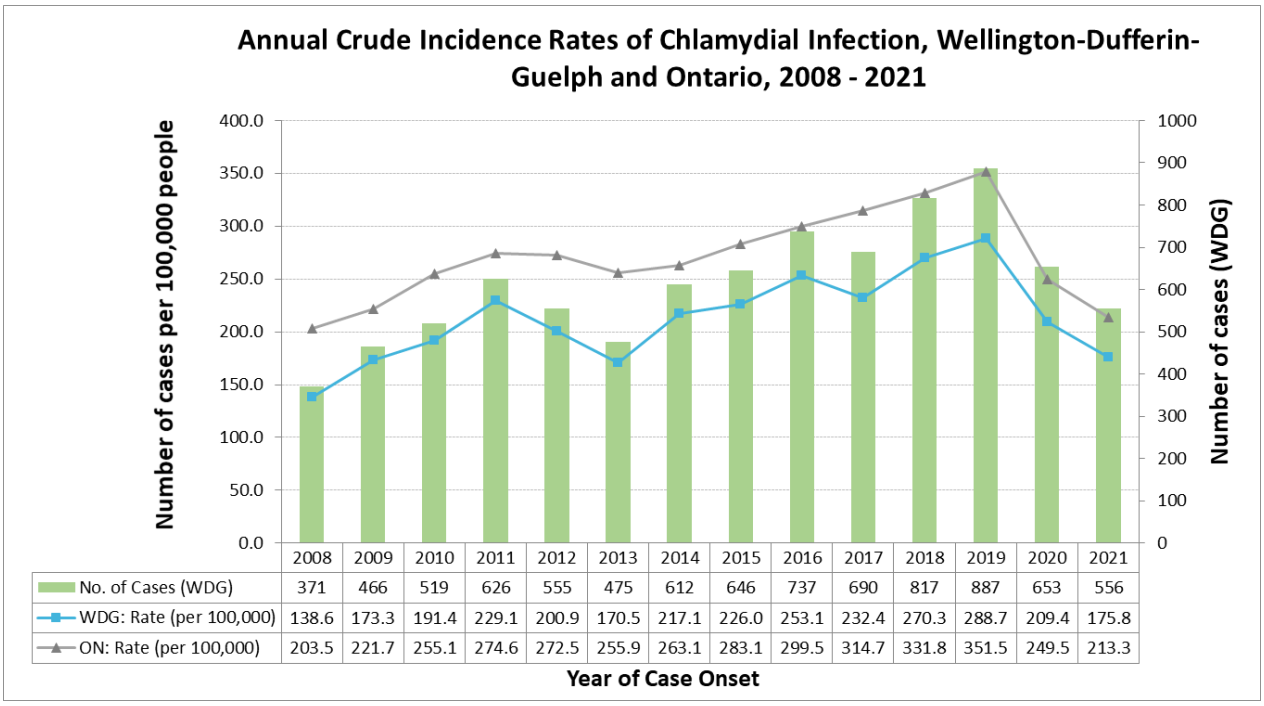
Key findings from local data reveal that:

- Annual rates of reported chlamydia in WDG and Ontario, which had been showing a generally increasing trend prior to 2020, have decreased over the past two years;
- Rates in WDG have been consistently lower than provincial rates throughout the past 14 years;
- Rates were highest in the 15-19-year-old and 20-29-year-old populations, with the increase seen in the past few years prior to 2020, as well as the more recent decrease, occurring primarily in these age groups; and
- Females continue to account for more reported cases than males.

Trends Over Time (2008-2021):

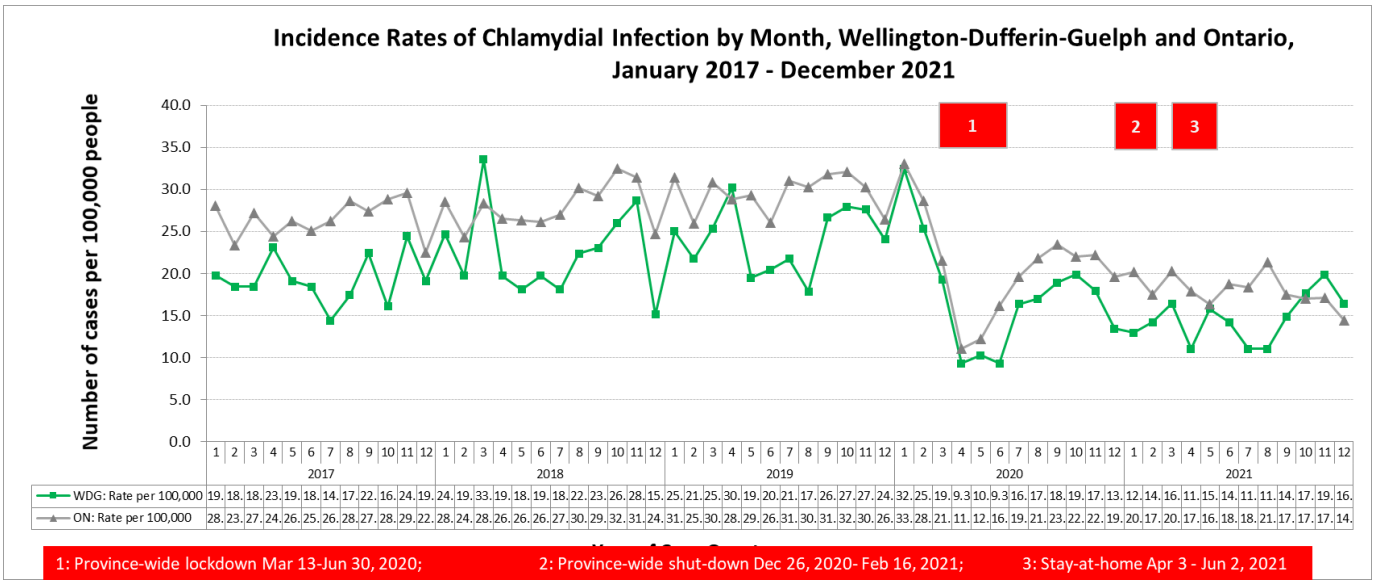
From 2008 to 2019, annual rates of reported chlamydia infections in Ontario and Canada showed a generally increasing trend.[8] Although local rates have been lower than those seen in the province, a similar trend has been observed in WDG, with the unadjusted rate increasing 108% from 139 cases per 100,000 people in 2008 to 289 cases per 100,000 people in 2019 (Figure 1a). Adjustments to account for age differences between the WDG and Ontario populations do not significantly change these rates.

Annual rates decreased sharply in 2020 and again in 2021 (Figure 1a), with the steepest decline occurring from January to April 2020 (Figure 1b).



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
No. of Cases (WDG)	371	466	519	626	555	475	612	646	737	690	817	887	653	556
WDG: Rate (per 100,000)	138.6	173.3	191.4	229.1	200.9	170.5	217.1	226.0	253.1	232.4	270.3	288.7	209.4	175.8
ON: Rate (per 100,000)	203.5	221.7	255.1	274.6	272.5	255.9	263.1	283.1	299.5	314.7	331.8	351.5	249.5	213.3

Figure 1b:



Changes in chlamydia rates over time have been well studied. Increasing rates seen before 2020 were likely due to a combination of factors, including:

- Changes in sexual behaviours (such as condom use) that modify the risk of transmission;
- Greater rates of re-infection after treatment, as cases return to their sexual networks;

- More accurate, available, and acceptable testing methods that allow more infections to be counted as cases; and
- More effective screening and contact tracing practices.[8]

The decreases seen in 2020 and 2021 could be due to decreased access to and use of sexual health services and testing in Ontario during the COVID-19 pandemic, which has been reported in other regions of North America.[2,3,4] Whether the trend also partly reflects fewer opportunities for transmission of chlamydial infections due to decreased interpersonal contact during lockdowns (Figure 1b) is currently unknown.

Rates by Age (2000-2021):

Sexually active youth and young adults are most likely to be infected with chlamydia. In WDG over the past 21 years, the annual rate of infection has generally been highest in the 20-29-year-old age group, followed by the 15-19-year-old age group. Infection rates are much lower in the 30-49-year-old and 50-64-year-old age groups, with a slowly increasing trend being evident in both.

In 2018, there was a sharp increase in the rate of reported chlamydial infections in the 20-29-year-old age group. The cause of this increase is uncertain, but it may be due to enhanced testing services offered through outreach programs, at community events, and to the university population in the City of Guelph. However, the increase was followed by steep decreases in the 2020 and 2021 annual rates in the two younger age groups, most likely due to restricted access to and use of sexual health services and testing during the pandemic.[2,3,4]

Rates by Gender (2017-2021):

The distribution of chlamydia infections between males and females has been consistent across the past five (5) years (2017-2021), with approximately 60% of cases in females and 40% in males. This mirrors national and provincial findings and likely reflects the fact that females are more likely than males to be screened for STIs.[8]

Gonorrhea

Gonorrhea is a bacterial infection which, like chlamydia, is spread through vaginal, anal or oral sex.[9] Infected females are often asymptomatic, though infected males often experience painful urination or discharge from the penis. Like chlamydia, gonorrhea can progress to pelvic infection or cause infertility.[6] Gonorrhea testing is often done alongside chlamydia testing using urine specimens, cervical swabs, rectal swabs, and/or throat swabs. Positive test results are reported to WDGPH. Safer sex practices

(such as condom use) reduce the risk of transmission. Gonorrhea infections can be treated with antibiotics, though rates of resistance are increasing in Canada.[10]

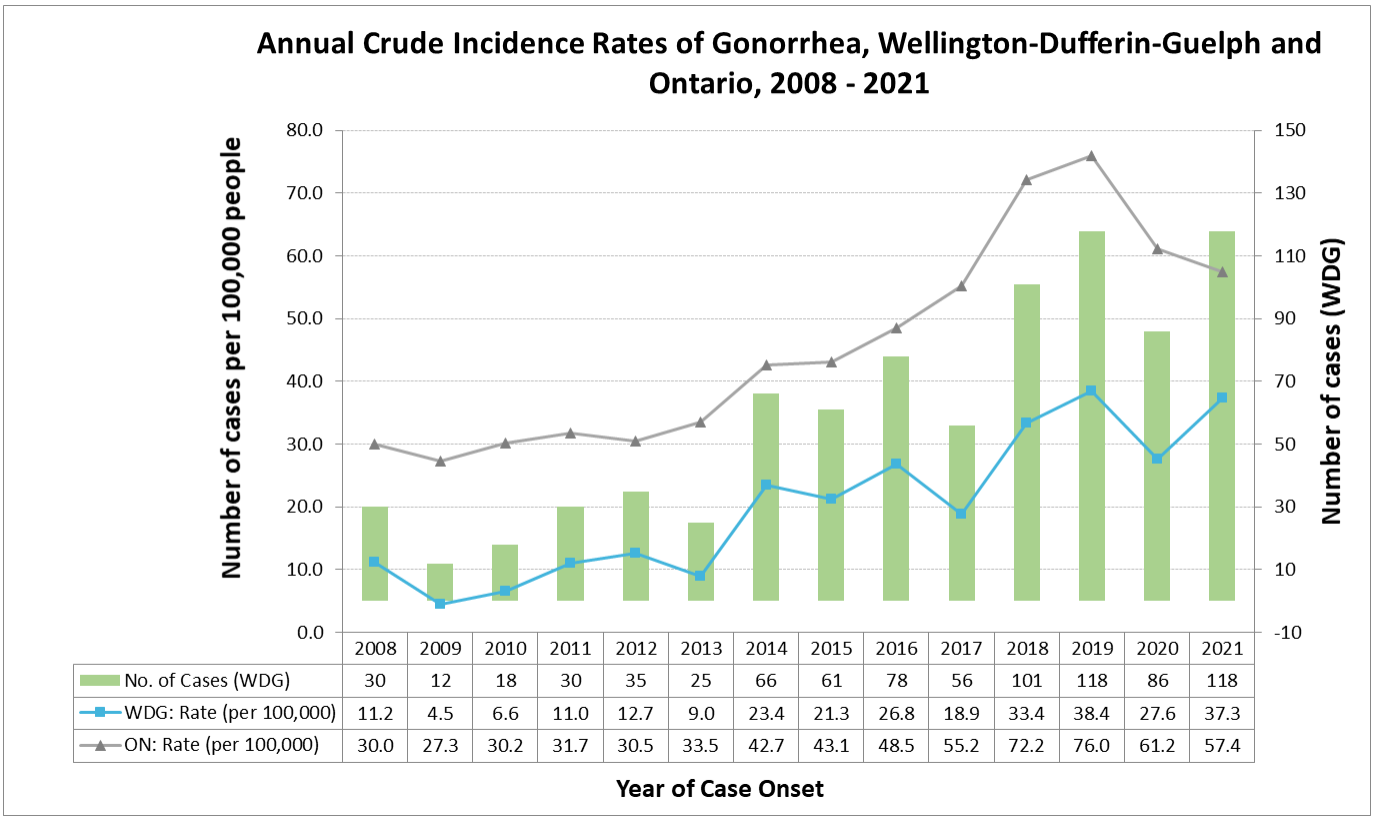
Key findings from local data reveal that:

- Annual rates of reported gonorrhea in Ontario, which had been showing a generally increasing trend prior to 2020, have decreased over the past two years. However, in WDG, a decrease in 2020 was followed by a rebound of the rate to what was seen in 2019;
- Rates in WDG have remained lower than provincial rates throughout the period from 2008 to 2021;
- Rates have generally been higher in the 15-19 and 20-29-year-old age groups than in the 30-49 and 50-64-year old age groups since 2000, with increases in all four age groups in the last 10 years; and
- Males have continued to account for more reported cases than females.

Rates Over Time (2008-2021):

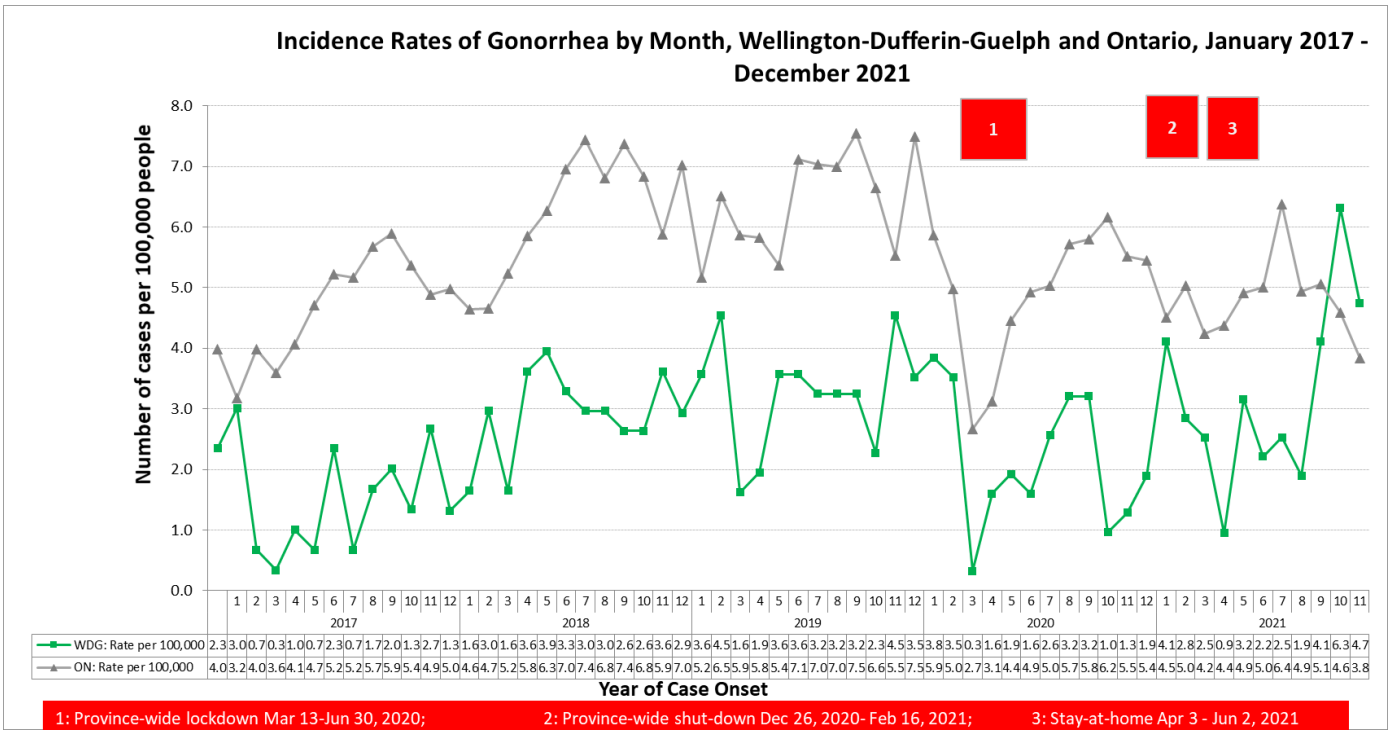
Rates of gonorrhea infection are much lower than rates for chlamydia. Like chlamydia, however, rates were increasing in WDG over the past several years, until 2019, in keeping with trends seen across the country.[8] The unadjusted rate increased 245% from 11 cases per 100,000 people in 2008 to 38 cases per 100,000 people in 2019, with the rate in WDG consistently lower than the provincial rate during this time (Figure 2a) as well as in the past two years. Adjustments to account for age differences between the WDG and Ontario populations do not significantly change these rates.

In Ontario, annual rates of gonorrhea, as seen for chlamydial infections, decreased sharply in 2020 and again in 2021 (Figure 2a), with the steepest decline occurring from January to April 2020 (Figure 2b). However, a decrease in annual rates in WDG in early 2020 was followed by a rebound later that year and in 2021 to the rate seen in 2019. This increase seems to be consistent with that seen recently in at least some other regions in North America,[11,12] and probably under-represents the magnitude of the actual increase in community transmission due to reduced testing since the start of the pandemic.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
No. of Cases (WDG)	30	12	18	30	35	25	66	61	78	56	101	118	86	118
WDG: Rate (per 100,000)	11.2	4.5	6.6	11.0	12.7	9.0	23.4	21.3	26.8	18.9	33.4	38.4	27.6	37.3
ON: Rate (per 100,000)	30.0	27.3	30.2	31.7	30.5	33.5	42.7	43.1	48.5	55.2	72.2	76.0	61.2	57.4

Figure 2b:



	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11
	2017												2018												2019												2020												2021										
WDG: Rate per 100,000	2.3	3.0	0.7	0.3	1.0	0.7	2.3	0.7	1.7	2.0	1.3	2.7	1.3	1.6	3.0	1.6	3.6	3.9	3.3	3.0	3.0	2.6	2.6	3.6	2.9	3.6	4.5	1.6	1.9	3.6	3.6	3.2	3.2	3.2	2.3	4.5	3.5	3.8	3.5	0.3	1.6	1.9	1.6	2.6	3.2	3.2	1.0	1.3	1.9	4.1	2.8	2.5	0.9	3.2	2.2	2.5	1.9	4.1	6.3	4.7
ON: Rate per 100,000	4.0	3.2	4.0	3.6	4.1	4.7	5.2	5.2	5.7	5.9	5.4	4.9	5.0	4.6	4.7	5.2	5.8	6.3	7.0	7.4	6.8	7.4	6.8	5.9	7.0	5.2	6.5	5.9	5.8	5.4	7.1	7.0	7.0	7.5	6.6	5.5	7.5	5.9	5.0	2.7	3.1	4.4	4.9	5.0	5.7	5.8	6.2	5.5	5.4	4.5	5.0	4.2	4.4	4.9	5.0	6.4	4.9	5.1	4.6	3.8

Factors driving increased gonorrhea rates from 2008 to 2019 are generally thought to be similar to those causing increased chlamydia rates over the same period,[8] while the decline seen in 2020 and 2021 provincially, and 2020 in WDG, could, as for chlamydial infections, be due to decreased access to and use of sexual health services and testing in Ontario during the COVID-19 pandemic. This has been reported in other regions of North America (Gilbert, Pinto, Tao et al.). Whether the trend also partly reflects fewer opportunities for transmission of gonorrhea due to decreased interpersonal contact during lockdowns is currently unknown.

The reason for the rebound in local rates in 2021, which was not evident at the provincial level, is also unknown. WDGPH collects data on risk behaviours from local cases; however, these did not indicate an increase in known risk behaviours for transmission of gonorrhea in 2021. Information on risk behaviours was unavailable for a higher proportion of cases in 2021 than in 2020, possibly due to reduced direct case follow-up by WDGPH during the pandemic.

Rates by Age (2000-2021):

Trends by age for gonorrhea over the past two decades have been quite similar to those for chlamydia, with rates generally highest in the 20-29-year age group. Rates have been lower in most years in the 15-19-year age group, with the difference in annual rates being more pronounced over the past 8 years as rates increased in 20-24-year-olds. Annual rates have been generally lower in the 30-49 year and 50-64-year age groups, with an overall slightly increasing trend in the past few years. This is consistent with trends seen elsewhere in Canada.[8]

As for chlamydial infection, 2018 saw a sharp increase in the rate of reported gonorrhea among 20-29-year-olds. The cause is uncertain, though the fact that chlamydia and gonorrhea rates have both increased in the same age group, in the same year, suggests that increased testing may play a role. The rebound in overall annual rates in 2021 that followed the drop in reported gonorrhea cases in 2020 was driven by the 20-29-year-old age group; no other age group showed that trend.

Rates by Gender (2017-2021):

The number of cases of gonorrhea in males has consistently been higher than the number of cases in females over the past five (5) years (2017-2021), with 64.8% of cases being male and 34.2% female. This sex distribution is the opposite of that seen for chlamydia, where females account for most of the cases.

The tendency for more cases to be males is consistent with trends reported nationally for gonorrhea.[13] This may be partly explained by the greater likelihood that males will have symptoms, seek health care and be tested. In other parts of the world, higher gonorrhea rates are also seen within communities of men who have sex with men (MSM).[8]

Infectious Syphilis

Syphilis is a bacterial infection spread through vaginal, anal or oral sex. Syphilis can also be transmitted "vertically" from an infected mother to her child during pregnancy or birth.[14] Syphilis infections progress through multiple stages, each with their own symptoms, though early symptoms include genital sores, rash and headache.[15] Later stages of syphilis can affect the brain, heart, or other organs.[9] Spread of syphilis can be prevented through condom use, testing/treatment and routine screening for pregnant women.

Key findings from local data reveal that:

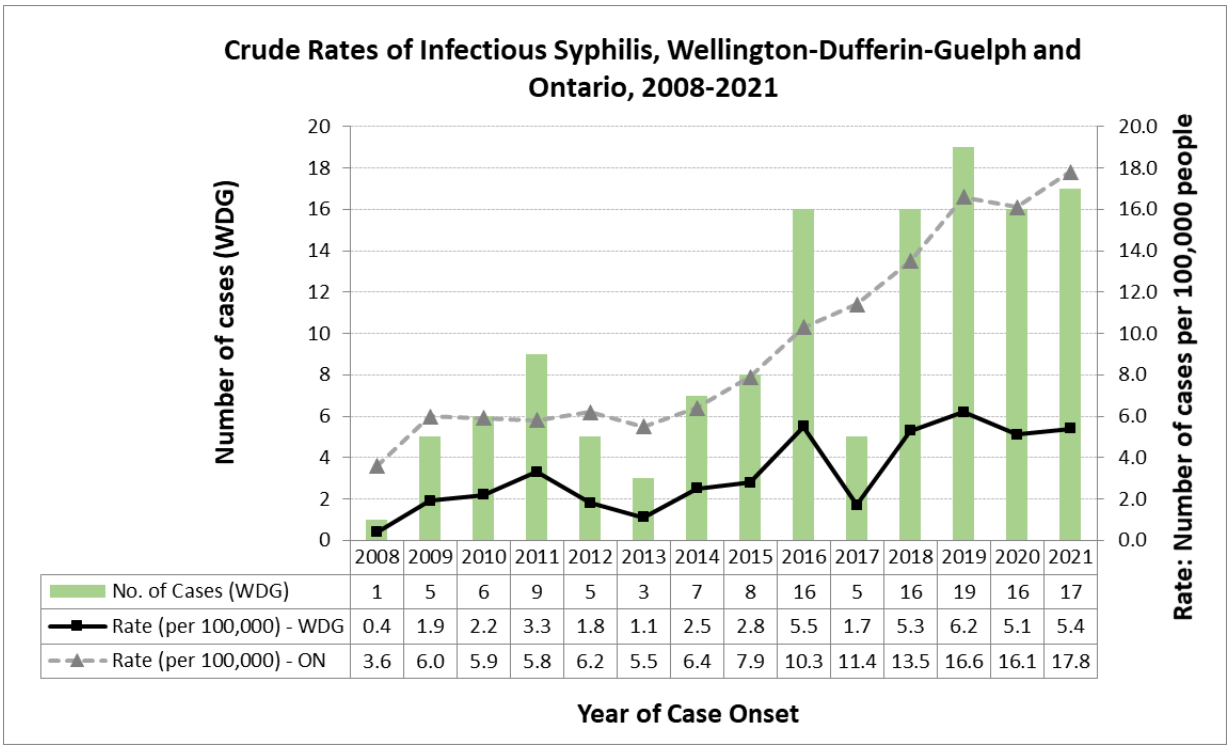
- Due to the small number of syphilis cases in WDG, it is difficult to draw conclusions about trends;
- As seen for chlamydial infections and gonorrhea, annual rates of infectious syphilis in WDG have been lower than provincial rates in most years since 2008;
- There is no evidence of the marked 2020 and 2021 decreases in the rate of reported infectious syphilis that were seen for chlamydial infections and gonorrhea;
- As for chlamydial infection and gonorrhea, rates are generally higher in the 20-29 year age group than in the 15-19, 30-49 or 50-64-year age groups
- Older adults (50-64 years old) have accounted for a greater share of infections over the past several years than they have for chlamydia or gonorrhea; and
- Males accounted for more reported cases than females.

Trends over Time (2008-2021):

Of the three sexually transmitted infections covered in this report, infectious syphilis was the least commonly reported STI in WDG. While rates have been increasing noticeably in Ontario over the past decade, the annual increase seen in WDG has been more gradual and sporadic. Small numbers of reported cases (fewer than ten in most years) limit the reliability of trends in the data, so these data should be interpreted with some caution. The annual rate in WDG has consistently been lower than the provincial rate throughout the period 2008-2021 (Figure 3a). Adjustments to account for age

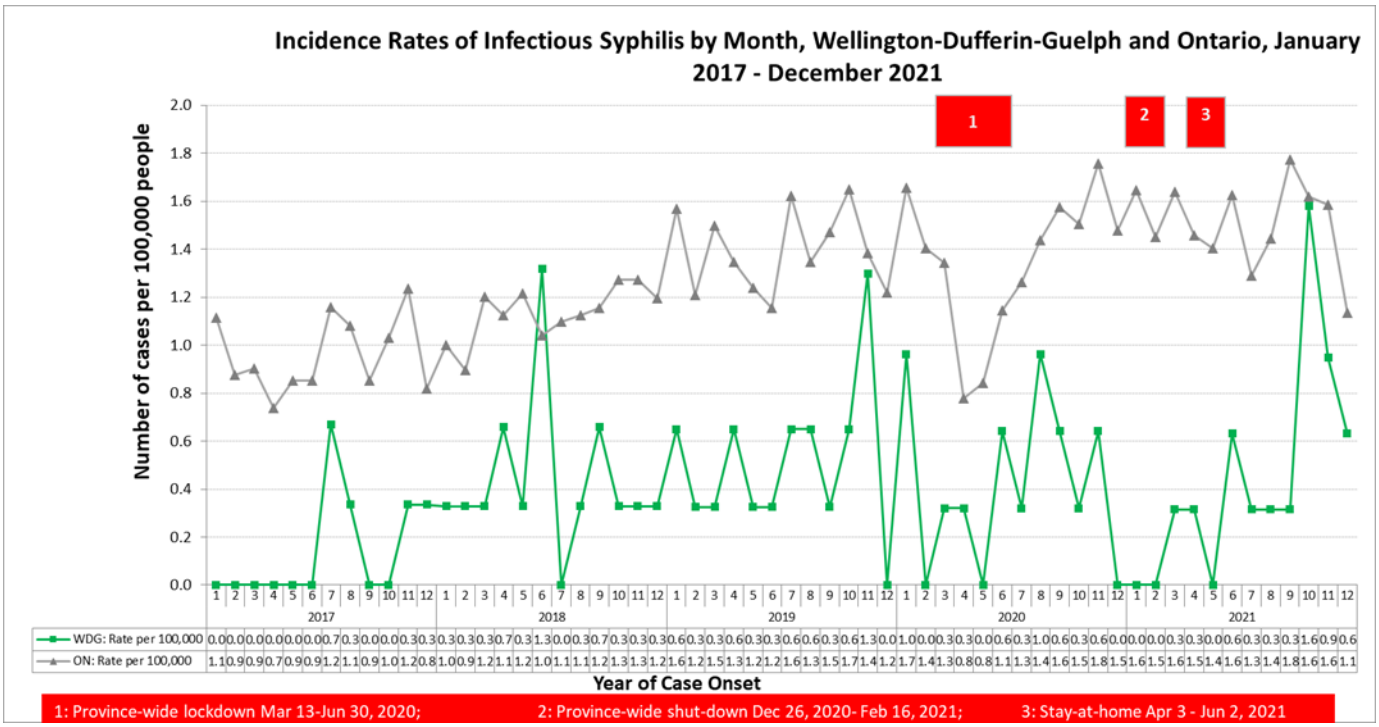
differences between the WDG and Ontario populations do not significantly change these rates.

The marked decreases in annual rates of chlamydial infections and gonorrhea seen in 2020 and 2021 have not been apparent for infectious syphilis, either in WDG or at the provincial level. A relatively slight but noticeable decrease in the monthly rate of cases reported provincially in the first four months of 2020 was followed by a return to pre-pandemic levels later that year, while in WDG, no obvious change in the monthly trend was apparent in 2020 or 2021 (Figure 3b). The absence of a decrease in reported cases for this STI over the COVID-19 pandemic years has been reported from at least one state in the USA,[16] but the reason for the difference in trend from other STIs is unclear.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
No. of Cases (WDG)	1	5	6	9	5	3	7	8	16	5	16	19	16	17
Rate (per 100,000) - WDG	0.4	1.9	2.2	3.3	1.8	1.1	2.5	2.8	5.5	1.7	5.3	6.2	5.1	5.4
Rate (per 100,000) - ON	3.6	6.0	5.9	5.8	6.2	5.5	6.4	7.9	10.3	11.4	13.5	16.6	16.1	17.8

Figure 3b:



Rates by Age (2000-2021):

Over the past 21 years, as is the case for the other two STIs, the rate of reported infections has been highest in the 20-29-year age group, particularly in recent years. However, in contrast to chlamydial infections and gonorrhea, a relatively high proportion of cases occurred in the older (30-49-year and 50-64-year) age groups. This reflects the age distribution seen nationally and possibly reflects transmission within MSM communities.[8]

Rates by gender: 2017-2021:

The vast majority (86.5%) of cases of laboratory confirmed infectious syphilis reported in WDG over the past five (5) years have been in males. This is similar to what has been seen nationally and probably reflects a relatively high level of transmission within MSM communities.[8]

Impact of Pandemic on WDGPH Sexual Health Service

Wellington-Dufferin-Guelph Public Health suspended most programs, including sexual health, to respond to the pandemic. During this time, people requesting testing for

sexually transmitted and blood-borne infections were referred to their primary care provider, or to walk-in clinics. HIV/AIDS Resources & Community Health (ARCH) also saw people for testing and follow-up treatment. WDG Public Health Nurses (PHN) saw clients for testing who presented with unique challenges such as not having an Ontario Health Card or requiring treatment for gonorrhea/syphilis when their testing occurred outside of the Wellington-Dufferin-Guelph jurisdiction.

The start of the pandemic saw a shift from in-person to virtual consultations at most primary care clinics in Ontario,[5] resulting in reduced access to primary care for STI testing. This exacerbated the lack of access to testing and care for patients in the community and may have resulted in fewer STI diagnoses.

WDGPH will be re-instituting testing for sexually transmitted infections in late February and early March 2022 in all areas of WDG. When the program restarts, initial assessments and counseling for clients will be done virtually by a PHN. If the client is asymptomatic, they will be sent a requisition to go to the lab for testing as required. If the client prefers to come to the office, only a short visit with the PHN to obtain specimens is warranted. Symptomatic clients will receive similar assessment/counseling by a PHN; however, they will also be booked for an onsite visit with a physician.

Public Health has a policy implemented prior to the pandemic that allows clients to self-test for Chlamydia and Gonorrhea following instructions by a PHN. This testing occurs during an on-site client visit and will continue when services restart. Self testing HIV kits are available through ARCH.

Conclusion

Since the start of the COVID-19 pandemic, steep declines in the annual rates of reported chlamydial infections and gonorrhea have occurred in Ontario. This trend has been reflected in local rates of chlamydial infections, while a decline in reported cases of gonorrhea seen in 2020 was followed by a rebound in the following year to levels seen in 2019. There has been no marked decrease in reported cases of infectious syphilis over the past two years either locally or provincially.

Several regions in North America have seen reduced access to, and/or use of, sexual health services during the course of the pandemic. This is though to explain, at least in part, the lower rates of reported cases for some STIs in 2020 and 2021. Reduced contact between people during lockdowns may also have caused fewer opportunities for

sexual contact and the transmission of STIs in the population; however, there is to date no definitive evidence of this.

The resumption of sexual health services in WDGPH and the lifting of restrictions locally and provincewide is likely to allow a more accurate assessment of the true trends of STIs in the community, as person-to-person contacts and access to services return to normal levels. Continued follow up of reported cases and monitoring of data gathered by the Clinical Services program will help to inform services and program activities at WDGPH.

Ontario Public Health Standard

Sexual Health, Sexually Transmitted Infections, and Blood-borne Infections (including HIV):

- To prevent or reduce the burden of sexually transmitted infections and blood-borne infections.

Population Health Assessment and Surveillance

- To provide direction on population health assessment and surveillance activities as defined in the Standards to ensure that local public health practice is informed to effectively and efficiently identify and address current and evolving population health issues.

2020 WDGPH Strategic Direction(s)

Double click checkbox to change from unchecked to checked.

☒ **Service Delivery**: We will provide our programs and services in a flexible, modern and accessible manner, and will ensure they reflect the immediate needs of our Clients and our role in the broader sector.

☒ **System Transformation**: We will equip the Agency for change in all aspects of our work so that we are ready for transformational system change when the time comes.

☐ **Knowledge Transfer**: We will ensure that our decision-making and policy development efforts are informed by meaningful health data at all times.

Health Equity

The information provided in this report shows that some sections of the local population are affected by STIs more than others, with higher incidence of the infections in particular age groups, and with cases of infectious syphilis disproportionately affecting the MSM community.

Public Health can attempt to address these inequities by targeting educational activities and provision of resources at the sections of the population at higher-risk for sexual practices associated with transmission of STIs and with higher incidence rates of lab-confirmed STIs as reflected by surveillance data.

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Appendices

N/A