

Evaluation of Universal Syphilis Screening at Delivery in British Columbia, Canada

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BACKGROUND:

- In July 2019, British Columbia (BC), Canada declared a provincial outbreak of syphilis due to increases in congenital and female syphilis rates
- As part of the response, all pregnant individuals were recommended a syphilis screen at delivery as of September 2019 to maximize detection and treatment of maternal and congenital syphilis

OBJECTIVE:

- We assessed the changes in maternal and early congenital syphilis rates following this new recommendation
- We aimed to characterize all maternal syphilis cases to identify opportunities for care optimization

METHODS:

- We conducted a quasi-experimental study to compare maternal and congenital syphilis incidence rates reported in BC between the pre-intervention period (July 1, 2018-June 30, 2019) and intervention period (October 1, 2019-September 30, 2022)
- Crude maternal and early congenital syphilis incidence rate ratios (IRR) using deliveries and prenatal syphilis tests (including testing at delivery) were calculated between these two periods
- Prenatal syphilis testing data were identified using a pregnancy flag and extracted from the BC Centre for Disease Control Public Health Laboratory, which performs >99% of all syphilis testing in BC
- Delivery data were extracted from the Perinatal Data Registry. Due to reporting delays, deliveries in 2022 were estimated based on the previous year
- Chart reviews were carried out on all maternal syphilis cases during the study period and were summarized using descriptive statistics

RESULTS:

- During the pre-intervention period, there were 5 maternal and 1 early congenital syphilis cases. In comparison, during the intervention period, there were 71 maternal and 11 early congenital syphilis cases
- Comparing the two periods, the IRR of maternal syphilis cases by prenatal syphilis test and by delivery was 3.1 (p=0.005) and 4.8 (p<0.001), respectively
- An increase in early congenital syphilis incidence, by delivery, was observed (IRR=3.7), which was not statistically significant (p=0.19)
- During the intervention period, 10% of all syphilis screening at delivery had no evidence of syphilis screening in the current pregnancy
- Of the 71 maternal syphilis cases reported in this period, 19 (27%) were identified at delivery, of which 11 (58%) had no evidence of previous prenatal syphilis screening in BC and 8 (42%) had a previous negative screen
- Of the 11 early congenital syphilis cases, 6 (55%) were born to mothers who had a previous negative prenatal syphilis screen
- All early congenital syphilis cases received timely and adequate treatment
- Maternal syphilis cases were often diagnosed in outpatient clinical settings (59%)
- The predominant reason for syphilis testing was for routine prenatal care or at time of delivery screening (83%)
- Factors associated with maternal syphilis cases included: an STI in the past 5 years (73%), unstable housing (54%), underlying substance use (74%), history of mental illness (86%) and requiring income assistance (78%)

CONCLUSIONS:

- Universal syphilis screening at delivery, in a landscape of increasing syphilis cases, helped identify and allowed prompt treatment of maternal and congenital syphilis cases
- Additional screening during pregnancy may be appropriate for those at risk, but also in jurisdictions observing an increase in syphilis cases among women and persons of reproductive age

Figure 1: Maternal Syphilis Diagnosis Before and After Intervention Implementation

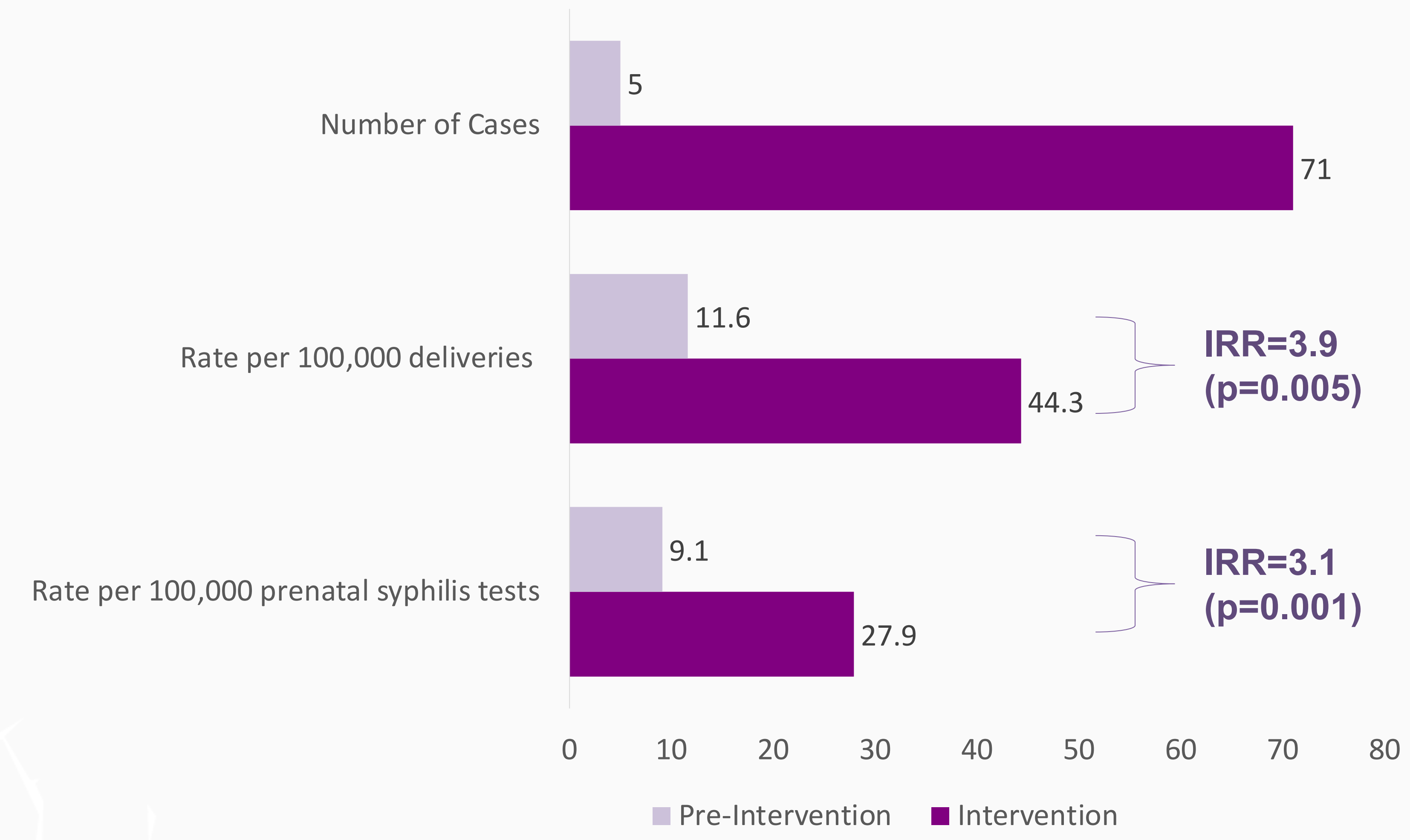


Table 1: Descriptive Epidemiology of Maternal Syphilis Cases in British Columbia (July 2018-Sept 2022) (n=77)

	Variable	N	%
Demographics	Age (n=77)		
	Mean	28.9	N/A
	Median	29.0	N/A
	Min	14.0	N/A
	Max	41.7	N/A
	Year *— Total (n=77)		
	2018	2	2.6
	2019	7	9.1
	2020	15	19.5
	2021	24	31.2
	2022	29	37.7
Diagnosis	Ethnicity (n=20)		
	White	8	40.0
	Non-White	12	60.0
	Diagnosis setting (n=69)		
	Outpatient Clinic (ex. primary care, specialist)	41	59.4
	Hospital	20	29.0
	Outreach	8	11.6
	Reason for testing (n=75)		
	Contact to STI	1	1.3
	Prenatal or at delivery	62	82.7
	Routine screen	6	8.0
	Symptomatic	1	1.3
	Incidental	5	6.7
	Stage of Infection (n=77)		
	Primary	2	2.6
	Secondary	4	5.2
	Early Latent**	71	92.2

*2018: July 2018-December 2018; 2022: Jan 2022-Sept 2022
**Early Latent: includes both confirmed and probable early latent infections . Probable early latent syphilis is defined as individuals that are asymptomatic or have had a four-fold or greater increase in titre over the last known non-treponemal test and the presence of one in the previous 12 months: 1) RPR titre ≥1:8 or 2) member of a known group at increased risk of acquiring syphilis in BC 3) sexual exposure to a partner, in the previous 12 months, who is a member of a group at known increased risk of acquiring syphilis in British Columbia
***Temporary/transient housing includes single room occupancies, modular/subsidized housing, hotels and shelters
****Other substances includes alcohol, benzodiazepines and other non-specified substances

	Variable	N	%
Potential Risk Factors	Recent STI (syphilis, CT or GC in past 5 years) (n=44)		
	Yes	32	72.7
	No	12	27.3
	HIV Status (n=64)		
	Positive	2	3.1
	Negative	62	96.9
	Housing Status (n=56)		
	Stable	26	46.4
	Not Stable	30	53.6
	No Fixed Address	15	50.0
	Temporary/Transient Housing***	15	50.0
	Substance Use (n=53)		
	No	14	26.4
	Yes	39	73.6
	Polysubstance	16	41.0
	Stimulants	8	20.5
	Other****/Not Specified	15	38.5
	Receiving Opioid Agonist Therapy (n=51)		
	Yes	15	26.4
	No	18	35.3
Partner Notification & Follow Up	N/A	18	35.3
	Mental Illness (n=29)		
	Yes	25	86.2
	No	4	13.8
	Income Assistance (n=23)		
	Yes	18	78.3
	No	5	21.7
	Gender of partners (n=66)		
	Female	0	0
	Male	66	100
	Male and females	0	0
	Number of partners (n=67)		
	Mean	1.5	N/A
	1	48	71.6
	2-5	18	26.9
	6 or more	1	1.5
	Able to notify partners (n=74)		
	Yes	59	79.7
	No	15	20.3

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