FINDING THE STARTING POINT TOWARD HEPATITIS C ELIMINATION: IDENTIFYING KNOWN PREVALENT HEPATITIS C CASES IN SOUTHERN NEW BRUNSWICK, CANADA

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BACKGROUND

The World Health Organization (WHO) defines 10 core indicators needed to evaluate health sector response toward the goal of viral hepatitis elimination by the year 2030. The first indicator is to understand context and needs is knowledge of actual chronic hepatitis C (HCV) prevalence[1]; however, current prevalence measures available for many regions rely on mathematical modelling to obtain estimates and know little about the actual characteristics of prevalent cases to guide development of programs to move toward HCV elimination on a provincial and regional level.

In most provinces, HCV is a reportable communicable disease captured by provincial Public Health authorities. This is typically a snapshot of the individual at the time of diagnosis and no longitudinal follow-up routinely occurs to identify if an incident HCV case goes on to spontaneously clear, is connected to care, has received treatment and achieved cure and/or has gone on to re-infect post-clearance. [2] This is the case in the province of New Brunswick where systems and available resources make it impossible to easily capture prevalence and positions of individuals along the HCV cascade of care.

The most recent available estimate of prevalence for New Brunswick was published by the Public Health Agency of Canada (PHAC) in 2007. [3] The prevalence estimate of 0.33% was derived from mathematical modelling and interpolated from national data leading to a substantial degree of uncertainty as to its accuracy. More recent modelling studies on HCV prevalence in Canada have been published citing national prevalence in the range of 0.30% to 0.99%, but do not specify provincial estimates in their publications.[4,5]

PROJECT AIM

The aim of this project was to determine HCV prevalence in southern New Brunswick and identify where prevalent cases within the region were along the HCV cascade of care. The data are being used to guide strategies and progress in the move toward HCV elimination.

METHODS

A variety of methods were used to obtain data on HCV cases in southern New Brunswick, as shown in Figure 1. Lists were cross-referenced and duplicate cases removed. Each record was reviewed to identify the case's current HCV infection status.

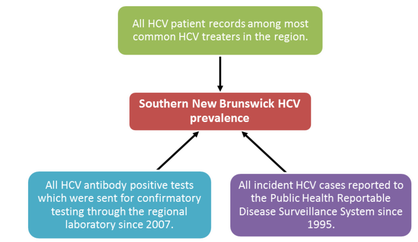

Figure 1. Information reviewed to produce HCV prevalence measure for southern New Brunswick

In the absence of a central comprehensive health record, determining the prevalence of HCV and the true patient characteristics is difficult and labour intensive. Southern New Brunswick's prevalence of <u>known</u> HCV cases is 0.27%.

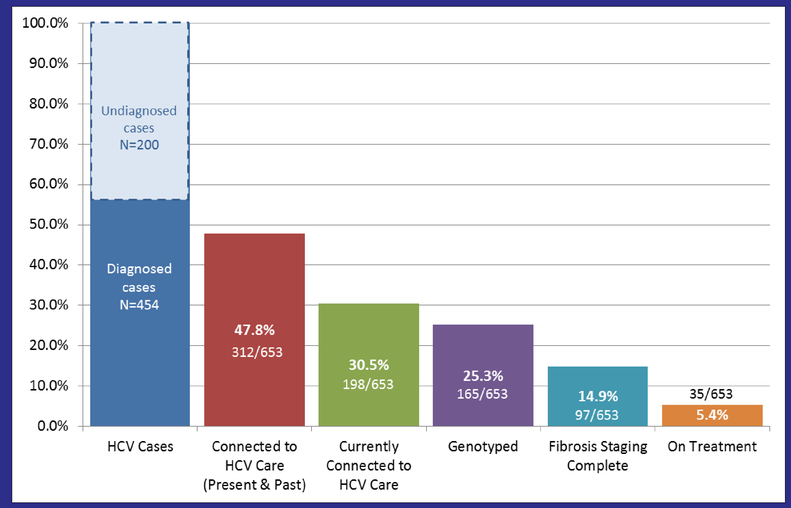

Figure 2. HCV Cascade of care for active adult cases as of June 1, 2019 in southern New Brunswick

Table 1. Status of HCV cases no longer considered active in the region

Status	Proportion (n)
Spontaneous clearance	27.7% (302)
Moved outside of the region	24.4% (267)
Cured with treatment	22.1% (241)
Death from unknown cause*	10.4% (114)
Unknown	8.5% (93)
Known drug-related death*	3.7% (40)
Known liver disease related death*	3.2% (35)

* death occurred prior to HCV treatment

Table 2. Characteristics of active HCV cases in the region

Characteristic	Active Cases (n=454)
Mean age at diagnosis, years (range, in years)	36.9 (1.0-72.6)
Mean age as of June 2019, years (range, in years)	45.6 (2.9-82.9)
Female, % (n)	32.7 (148)
Acquisition related to high-risk behaviours†, % (n)	75.1 (341)

† high risk behaviours includes evidence of snorting or injection drug use, incarceration, high risk sexual behaviours, tattoos/piercings outside of reputable shops, or paediatric acquisition through vertical transmission and 43/453 we were unable to identify possible high risk behaviours from available sources

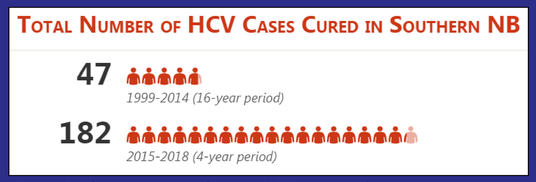

Figure 3. Characteristics of active HCV cases in the region

MOST SIGNIFICANT BARRIERS TO UNDERSTANDING HCV PREVALENCE:

- ❖ No centralized health record. HCV treatment and follow-up information contained in paper records in individual specialist offices.
- ❖ No centralized provincial record of dispensed medications in the community until 2016.
- ❖ Reliance on patient self-report to identify HCV positive cases if not diagnosed in this province.

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RESULTS

- A total of 1,527 unique patients were captured as a result of this review and yielded a total of 1,546 episodes of HCV infection of which 454 (29.4%) are active, chronic cases of HCV who still reside within the region and require follow-up as of June 2019.
- Of the 1,003 cases no longer considered active locally, Table 1 shows the last known status.
- Overall, mean age at the estimated time of diagnosis (known in 85.6% of cases) was 39.0 years (range 1.0-94.8 years) and 34.4% were female (n=532). Characteristics of only current active cases are shown in Table 2.
- Based on sources available for review, HCV acquisition was related to:
  - high risk behaviours – 56.3%
  - unknown source – 26.0%
  - other exposures (i.e. blood transfusions) – 17.3%
  - vertical transmission - 0.4%
- Of all known treated and cured HCV cases, 81.3% of them have undergone treatment in the 4-year period between 2015-2018 (Figure 3).
- Given that approximately 44.0% of HCV cases are undiagnosed, the number of active cases may be adjusted to reflect this, giving an approximate total of 653 active local cases with 454 officially diagnosed.
- Based on the known number of active cases, chronic HCV prevalence in southern New Brunswick is 0.27%.
- Based on the known and the estimated undiagnosed number of cases, the chronic HCV prevalence in southern New Brunswick is approximately 0.38%.

DISCUSSION

The Sustainable Development Goals (SDGs) were established through the United Nations in 2015 and among these goals is the aim to combat viral hepatitis.[6] In 2017, aligned with the SDG's, the WHO outlined the strategy to eliminate hepatitis as a public health threat by 2030.[7] This is defined as a 90% reduction in incidence from the 2015 baseline and a 65% reduction in the number of related deaths.[8]

In Canada, there remain substantial challenges to reducing the incidence of HCV infections. The majority of incident cases are currently acquired among people who inject drugs (PWIDs) and the opioid crisis has contributed significantly to the challenge of HCV elimination strategies. Programs designed to meet the health needs of the PWID cohort are essential, and it is understood that a comprehensive approach to harm reduction is required.

To critically evaluate the health sector's progress toward achieving the goal of viral hepatitis elimination by 2030, there must be accurate knowledge of local HCV prevalence and prospective mapping will ensure proper context. This study finds the known prevalence of chronic HCV in southern New Brunswick to be 0.27%, aligning closely with PHAC estimates for the province. This collaborative initiative will map local progress in southern New Brunswick and help to ensure that relevant milestones are met.

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