HCV INCIDENCE AMONG HIV-INFECTED MSM IN FRANCE: RESULTS FROM THE FHDH-ANRS CO4 COHORT

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BACKGROUND

Since 2000, hepatitis C virus (HCV) has been an emerging epidemic among HIV-infected MSM [1,2].

In France, although access to effective DAA treatment is possible for all people infected with HCV since 2017 only, DAAs were available without restriction from 2014 for selected subgroups, including HIV-infected patients [3].

The use of hospital-based data may allow to estimate incidence rates to guide public health strategies, while considering methodological issues addressed by these data.

OBJECTIVE

To estimate the incidence of primary HCV infection among French HIV-infected MSM over 2014-2017 (i.e. post-DAA era)

METHODS

Data source and individuals selection

FHDH (French Hospital Database on HIV) ANRS CO4: Prospective hospital cohort (created in 1989) of HIV-infected individuals receiving care in one of the French participating hospitals.

Inclusion criteria (**Figure 1**):

- ❑ Men recorded as having acquired HIV through sex between men.
- ❑ Followed at least once in the FHDH ANRS CO4 cohort between 2014 and 2017.
- ❑ With a baseline negative anti-HCV test and at least one subsequent anti-HCV test between 2014 and 2018.

HCV primary incidence calculation

Definition of follow-up

- ❑ Start of follow-up = latest date between January 1st 2014, FHDH enrollment, or last clinical visit preceding the first anti-HCV negative test.
- ❑ End of follow-up = first date between December 31st 2017, death, lost to follow-up, or HCV infection.
- ❑ Lost to follow-up = absence of clinical visit for 18 months; follow-up was ceased 6 months after last clinical visit.

Incident HCV infection: any positive HCV test (RNA and/or antibodies) during follow-up.

Date of HCV infection: based on the interval between the last HCV negative and first HCV positive test:

- ❑ Interval <u>within 6 months</u> ⇒ midpoint between two tests
- ❑ Interval <u>> 6 months</u> ⇒ first positive test minus 3 months

For **HCV negative individuals** (i.e. never testing HCV positive) with continued follow-up in the FHDH cohort, follow-up was ceased on December 31st 2017.

Sensitivity analysis: Varying main assumptions

RESULTS

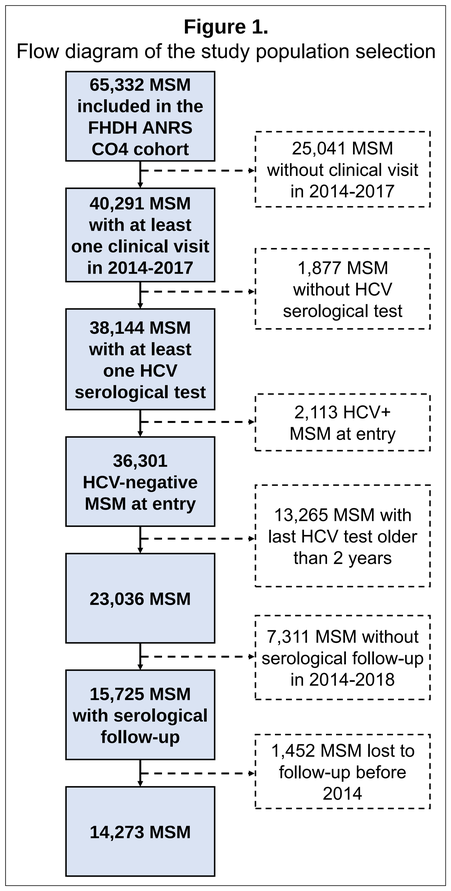
Study population

Among the 38,144 HIV-infected MSM followed in the FHDH ANRS CO4 cohort over 2014-2017 with at least one anti-HCV test result, 5.5% (n = 2,113) were already HCV-infected at study entry.

14,273 HIV-infected MSM were finally included into the analysis (**Figure 1**):

- ❑ Median age (IQR): 45 years (35-52)
- ❑ Median number of HCV serological tests (IQR): 3 (2-4)
- ❑ Median testing frequency (IQR): 1.25 years (0.85-1.93)

Figure 1.
Flow diagram of the study population selection



Main finding: **Incidence of primary HCV infection among French HIV-infected MSM decreased over time** from 0.98/100 py in 2014 to 0.45/100 py in 2017

Figure 2.
Hepatitis C Virus Incidence among HIV-infected MSM in the FHDH ANRS CO4 cohort

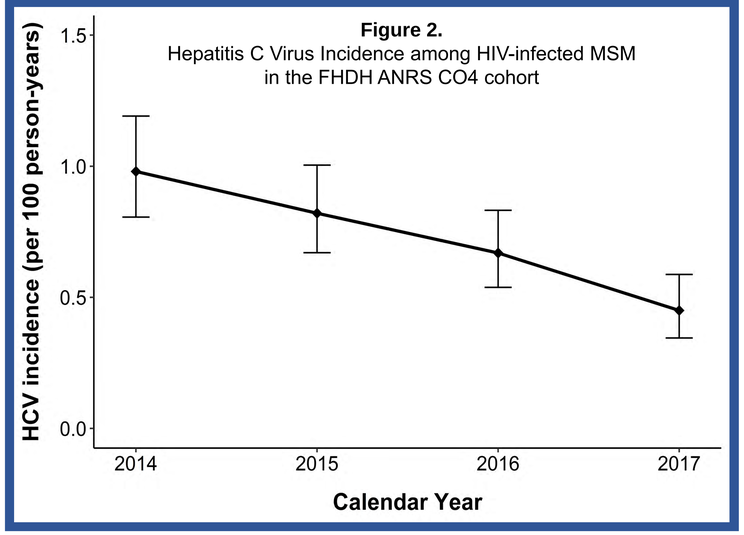


Table 1. HCV incidence over 2014-2017: main analysis and sensitivity analyses

		2014	2015	2016	2017
Main analysis (*see methods section*)	**py**	10,308	11,455	12,100	12,003
	# of infections	101	94	81	54
	Incidence rate	0.98 [0.81-1.19]	0.82 [0.67-1.19]	0.67 [0.54-0.83]	0.45 [0.35-0.59]
Sensitivity analysis Date of infection = midpoint between last HCV negative and first HCV positive test (whatever the interval between tests)	**py**	10,273	11,414	12,076	11,994
	# of infections	114	86	65	37
	Incidence rate	1.11 [0.92-1.33]	0.72 [0.61-0.93]	0.54 [0.42-0.69]	0.31 [0.22-0.43]
Sensitivity analysis End of follow-up for HCV negative patients = date of last HCV negative test	**py**	9,849	9,848	8,627	4,279
	# of infections	101	94	81	54
	Incidence rate	1.03 [0.84-1.25]	0.95 [0.78-1.17]	0.94 [0.76-1.17]	1.26 [0.97-1.65]

py: person-years, **# of infections**: number of infections, **Incidence rate**: Incidence/100 py [95% CI]

HCV incidence

Over 2014-2017, included HIV-infected MSM accounted for a total of:

- ❑ 45,866 py of follow-up
- ❑ 330 new incident HCV infections
- ❑ **Overall incidence rate: 0.72/100 py** (95% confidence interval: 0.65-0.80)
- ❑ Median follow-up (IQR): 3.97 years (1.94-4)

Annual incidence decreased significantly (Man-Kendall test, p_{trend} =0.04)

Most marked decrease in 2017 (33% reduction between 2016 and 2017)

Regardless of the number of person-years, the absolute number of new infections continuously declined over time (**Table 1**)

Sensitivity analyses

- ❑ <u>Date of infection</u>
  1. Date of first HCV positive test
  2. Midpoint between last HCV negative and first HCV positive test
- ❑ <u>Ending date for lost to follow-up patients</u>
  3. 12 months after last clinical visit
  4. Date of last clinical visit
- ❑ <u>Ending date for HCV negative patients with continued follow-up</u>
  5. Date of last clinical visit
  6. Date of last HCV negative test

Most important differences were observed for sensitivity analyses reported in **Table 1**; results were similar for other sensitivity analyses.

Considering the last negative test as the end of follow-up for HCV negative patients leads to a shorter follow-up time for MSM who remained HCV negative throughout follow-up.

DISCUSSION AND CONCLUSION

We observed a 54% decrease in HCV primary incidence over 2014-2017, in a large cohort of HIV-infected MSM in France.

Most sensitivity analyses resulted in the same decreasing trend. Taking into account follow-up until HCV-negative test only, we obtained a relatively stable incidence. However, negative tests may not be systematically reported. Consequently, this method is likely to overestimate HCV incidence and raises methodological issues when estimating incidence rates via hospital-based data.

These results are in line with recent DAA scale-up observed in France [3], and similar trends were reported in Netherlands [4].

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