

# Low test uptake for Hepatitis C And HIV among the young seeking drug use treatment in Denmark between 1996-2015

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## Objective

To evaluate test uptake and prevalence of Hepatitis C virus (HCV) exposure, Chronic Hepatitis C (CHC) and HIV in a cohort of drug users in treatment from 1996 -2016.

## Background

People who use drugs(PWUD) are the key population in the western world to address if hepatitis C transmission is to be halted. The World Health Organization (WHO) strategy on hepatitis states that the incidence should be reduced by 90% by 2030. In many settings testing is a main barrier for care. The testing uptake (ever) for HCV among Danish drug users in treatment was in 2007 54 % and is unknown for HIV. Prevalence of CHC ranged in the region of this study in a small survey(n=360) in 2007 from 53% in ever injectors to 5 % in never injectors.<sup>2</sup>

Testing uptake in outreach hepatitis clinics served by the department of infectious diseases in the region of Funen has previously been shown to be above 90% among current OST recipients(poster 30 INHSU 2015).



Figure 1: Cascade of care for HIV and HCV

All drug treatment programs in Denmark must offer testing but it is not a requirement for entering opiate substitution therapy(OST). As sharing injection equipment and frequent injecting is often prevalent prior to entering into OST knowledge about the incident population is much needed if halting transmission is the aim.

This study is part of the ODenseDrugusers-HEPatitis(ODD-HEP) cohort study aiming at using available registers to identify barriers in the treatment cascade. This papers main aim is to illuminate gaps in testing and estimate undiagnosed infections.

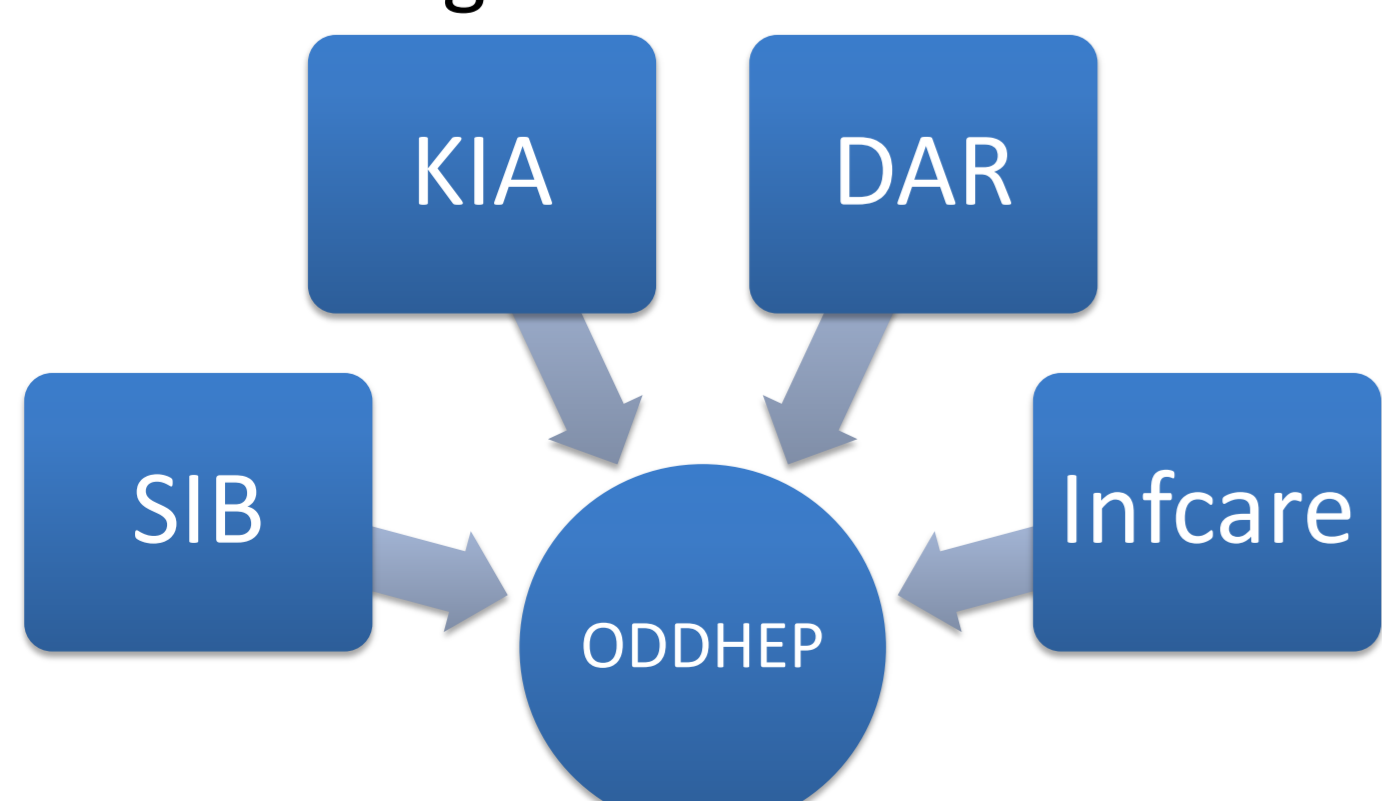


Figure 2: ODD-HEP Cohort data sources. SIB: National drug use treatment database. KIA: Regional test database. DAR: Danish Death Register. Inficare: Regional hepatitis care database.

## Methods

Register based cohort study. (Figure 2) Baseline cohort: Registered in the national drug use treatment database(SIB) since 1996 in the region of Funen, Denmark. Test results for HCV and HIV obtained from department of Clinical Immunology (KIA). Date and cause of death of from the Danish Death Register(DAR). Linkage to care from the regional database for hepatitis(Inficare).

## Results

From 1996 to 2015 a total of 5483 persons with a valid unique personal identifier(CPR) had been in drug treatment in the region. Overall mortality rate was 1.2% (2.8% and 1.5% in HCV-RNApos and HCV-RNAneg/anti-HCVpos). 58% of CHC patients were connected to care.

1. Test uptake in persons born after 1995 was 26.0% and 37.5% for HCV/HIV respectively.

Cohort characteristics as of December 31 <sup>st</sup> 2014 N=5483	Female N=1361 (% of females)	Male N=4122 (% of males)	Tested ever HCV N=3019 (% of age grp)	Tested ever HIV N=3460 (% of age grp)	Dead N= 571 (% of age grp)
Gender in %	24.8%	75.2%	72.9% male	70.9% male	80.4% male
Median age / Median age at death (range)	33 (14-76)	33 (14-74)	41 (17-76)	39 (17-16)	42 (15 - 72)
Birth cohort (age Dec 31 <sup>st</sup> 2014 if alive)					
Born post 1995 (<20 years)	56 (4.1%)	140 (3.4%)	19 (9.7%)	31 (15.8%)	2 (1.0%)
1986-1995 (20-29 years)	477 (35.1%)	1308 (31.7%)	516 (28.9%)	713 (40.0%)	18 (1.1%)
30-39 years (1976-1985)	356 (26.2%)	1149 (21.9%)	851 (57.9%)	1016 (69.1%)	98 (6.7%)
40-49 years (1966-1975)	235 (12.6%)	914 (22.2%)	876 (76.2%)	932 (81.1%)	185 (16.1%)
50-59 years (1956-1965)	172 (12.6%)	496 (12.0%)	563 (84.3%)	582 (87.1%)	170 (25.5%)
60-69 years (1946-1955)	61 (4.5%)	140 (3.4%)	182 (90.6%)	177 (88.1%)	89 (4.3%)
Pre 1946 (70+years)	4 (0.3%)	10 (0.2%)	12 (85.7%)	9 (64.3%)	9 (64.3%)

Table 1: Basic demographics, including dead and testing uptake.

## 2. Declining numbers of opiate users 1996-2015

Main drug at first entry date to drug treatment by 5 year period *	Benzo-diazepines	Cannabis	Central Stimulants	Opiates	Other drugs <sup>†</sup>
	N=55	N=2243	N=585	N=1544	N=152
Pre 1996 n=37 N (% of entries in time period)	0	1 (2.7%)	0	33 (89.2%)	3 (8.1%)
1996-2000 n=1261 N (% of entries in time period)	9 (0.7%)	203 (16.1%)	43 (3.4%)	943 (74.8%)	63 (5.0%)
2001-2005 n=1009 N (% of entries in time period)	15 (1.5%)	411 (40.7%)	181 (17.9%)	377 (37.4%)	25 (2.5%)
2006-2010 n=1195 N (% of entries in time period)	20 (1.7%)	762 (63.6%)	247 (20.7%)	132 (11.1%)	35 (2.9%)
2011-2015 n=1077 N (% of entries in time period)	11 (1.0%)	868 (80.6%)	114 (12.8%)	59 (5.5%)	24 (2.2%)

Table 2: Main drug at first entry into treatment \* Main drug available for 4579 persons of 5483, <sup>†</sup>Lightergas, LSD etc.

## 3. 78.4% of HCV infections diagnosed

	All in treatment	Risk group I Never OST, Hard drugs or injecting	Risk group II Never OST or Injecting +Hard drugs	Risk group III Ever on OST +/- injecting	Risk group IV Never on OST but history of injecting.
N(%)	5483(100%)	1390 (25.3%)	1367 (25%)	1844 (33%)	884 (16%)
Age median (range)	35 (14-76)	29 (14-72)	28 (15-74)	45 (20-76)	34 (17-74)
Dead % of group	10.4%	2.7%	3.4%	20.3%	13.5%
HCV testing	% of group (CI)	% of group (CI)	% of group (CI)	% of group (CI)	% of group (CI)
Tested ever RNA or anti-HCV	55.1% (53.7-56.4) N=3019	27.2% (24.6-29.5)	36.2% (33.7-38.7)	88.7% (87.2-90.1)	57.9% (54.7-61.2)
Ever positive RNA or anti-HCV	45.1% (43.3-46.9) N=1361	2.9% (1.2-4.6)	5.3% (3.9-7.2)	69.2% (67.0-71.5)	37.6% (33.4-41.8)
HCV RNA pos latest test of exposed with RNA test % (CI)	55.9% (53.3-58.6) N=729	42.9% (-0.9-86.6)	61.9% (39.6-84.2)	54.3% (51.4-57.3)	66.1% (60.0-73.2)
Chronic HCV prevalence in patients alive) of risk group <sup>‡</sup>	25.2%	1.2% [0.9%]	3.3% [1.4%]	37.6% [34.8%]	24.9% [17.05%]
Estimated undiagnosed HCV infections N(total infections) % pr. risk group alive+death*	211(975) 21.6%	12(17) 70.6%	29(45) 64%	78(693) 11.3%	92(220) 41.8%
HIV testing					
Tested ever HIV	N=3460 (63%)	41.3% (38.9-43.9)	48.8% (46.1-51.4)	88.9% (97.4-90.3)	65.9% (62.7-69.0)
HIV pos of tested	N=24	0.3% (-0.1-0.8)	0.3% (-0.1-0.7)	1.1% (0.6-1.6)	0.3% (-0.1-0.8)

Table 3: Test uptake according to risk group. Risk groups based on data from SIB across treatment episodes <sup>‡</sup> Assuming percentage of RNA pos is the same between tested and untested anti-HCV positives <sup>\*</sup> Assuming prevalence in untested group is equivalent to tested group and that exposed-chronic ratio is the same

## 4. Declining rates of first time testers positives

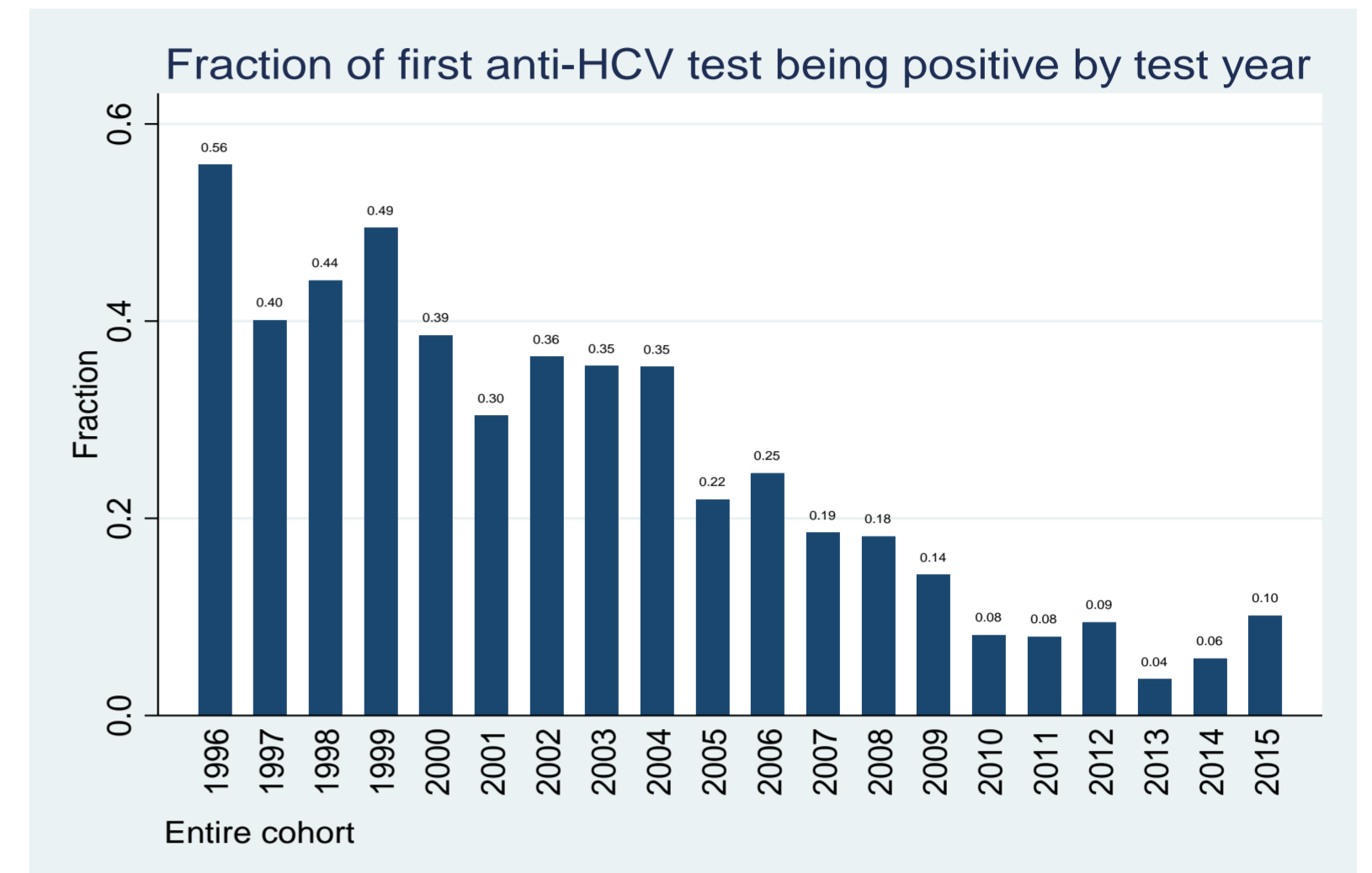


Figure 3: Fraction of first time testers being positive for anti-HCV

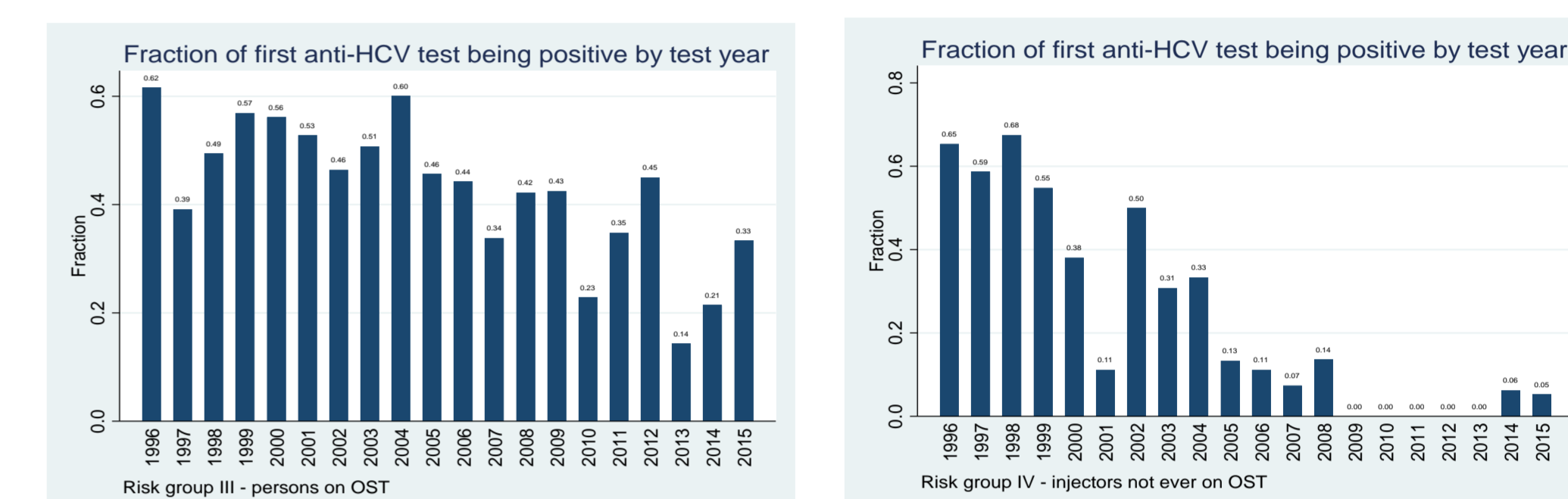


Figure 4 and 5: Fraction of first time testers being positive for anti-HCV in high risk groups

## 5. OST is the main determinant for being tested and Injection for being HCV positive.

Odds ratio(CI)	Injection ever	OST ever	Birth cohort Alive as of 31 <sup>st</sup> Dec 2014		Risk group III Ever on OST +/- injecting	Risk group IV Never on OST But history of injecting.
			N	% + anti-HCV		
Tested for HCV	2.4 (2.1-2.8)	4.1(3.4-4.9)	Born post 1995 (<20 years)	0	11	18.1%
HCV positive	16.6 (12.9-21.4)	5.1 (4.2-6.2)	1986-1995 (20-29 years)	50	274	41.4%
Tested for HIV	2.0 (1.7-2.3)	2.7 (2.2-3.3)	30-39 years (1976-1985)	314	263	53.3%
HIV positive	2.2 (0.7-6.9) n.s	3.3 (1.0-10.6)	40-49 years (1966-1975)	496	138	76.8%
				88.3%	52.9%	

Table 4: Multivariate analysis including age injection and being on OST as determinants for test uptake and exposure to infection

Table 5: Testing uptake and prevalence of HCV and HIV in high risk groups

## Conclusion

- Prevalence of HIV is still very low in this Danish drug use population(0,7%).
- Testing gaps were identified in younger age groups at high risk.
- Only 21.6 % of chronic HCV infections is estimated to be undiagnosed among drug users in treatment.
- Group of former or current injectors never on OST has the highest rate of undiagnosed infections (41.8%).
- 40% of under 30 year olds on OST is anti-HCV positive indicating ongoing transmission.
- Opiate use is declining in both absolute and relative numbers as is HCV infections in young persons making favorable circumstances for reducing incidence of HCV in our population should treatment be available for all.

## Disclosures

This study was supported by a Gilead Sciences Nordic Fellowship Grant. Gilead Sciences have not been involved in the design, dataanalysis or writing of this paper

## References

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## AUTHOR FOR CORRESPONDANCE

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