The HEPRIS Study: Prevalence of Hepatitis C in Norwegian Prisons

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Disclosure of interest

- This collaborative study was sponsored by AbbVie, contributing to the design, participating in collection, analysis and interpretation of data, and in writing, reviewing and approval of publications from the study.
- Hauge is an industry-sector Ph.D.-student funded by AbbVie and the Norwegian Research Council.
- Jarnaess is an employee of AbbVie and a shareholder of AbbVie stocks.
- Midgard has received advisory board fees and lecture fees from Gilead, AbbVie and MSD.
- Dalgard and Kielland have no disclosures.

Acknowledgements

- The participants in the study who were willing to participate at a challenging time in their lives.
- Ole Jørgen Scheie Lygren and Ronny Bjørnestad from proLAR Nett – National Association for People in OAT (Opioid Agonist Treatment) who gave valuable input to the design of the study. No funding was provided for Lygren, Bjørnestad or proLAR – Nett through the study.
- Prison health services who facilitated access to the prisons for the study team and gave valuable practical and logistical support.

Main Objective and Design

- To assess by systematic screening the prevalence of hepatitis C Virus (HCV)-infection among incarcerated individuals in general, and the subpopulation of people who inject drugs specifically.

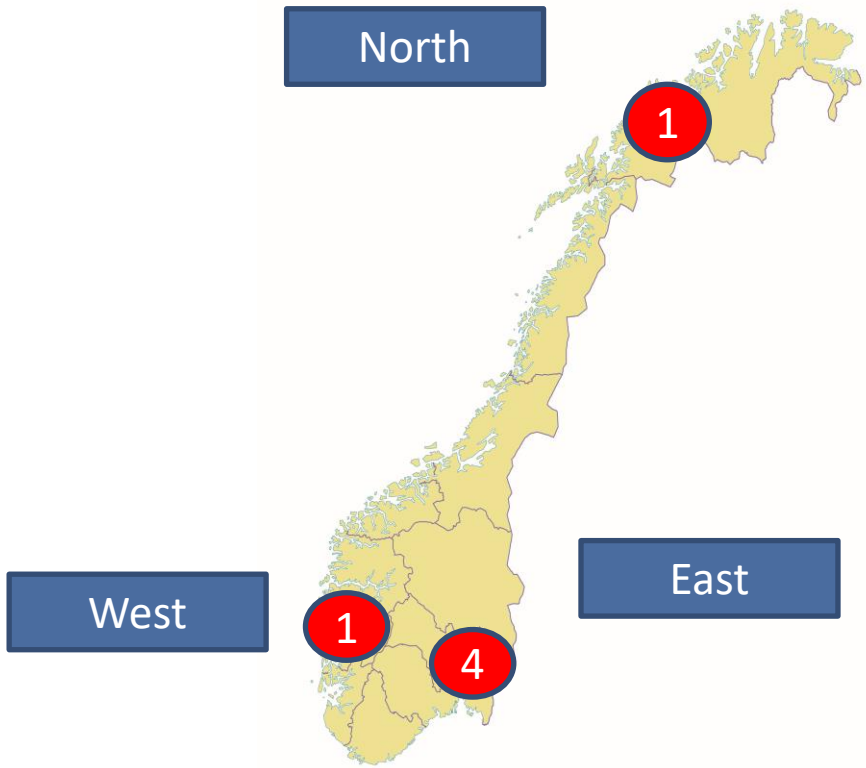
- Cross-sectional, epidemiological, non-interventional, single-country study.

HEPRIS Study Sites

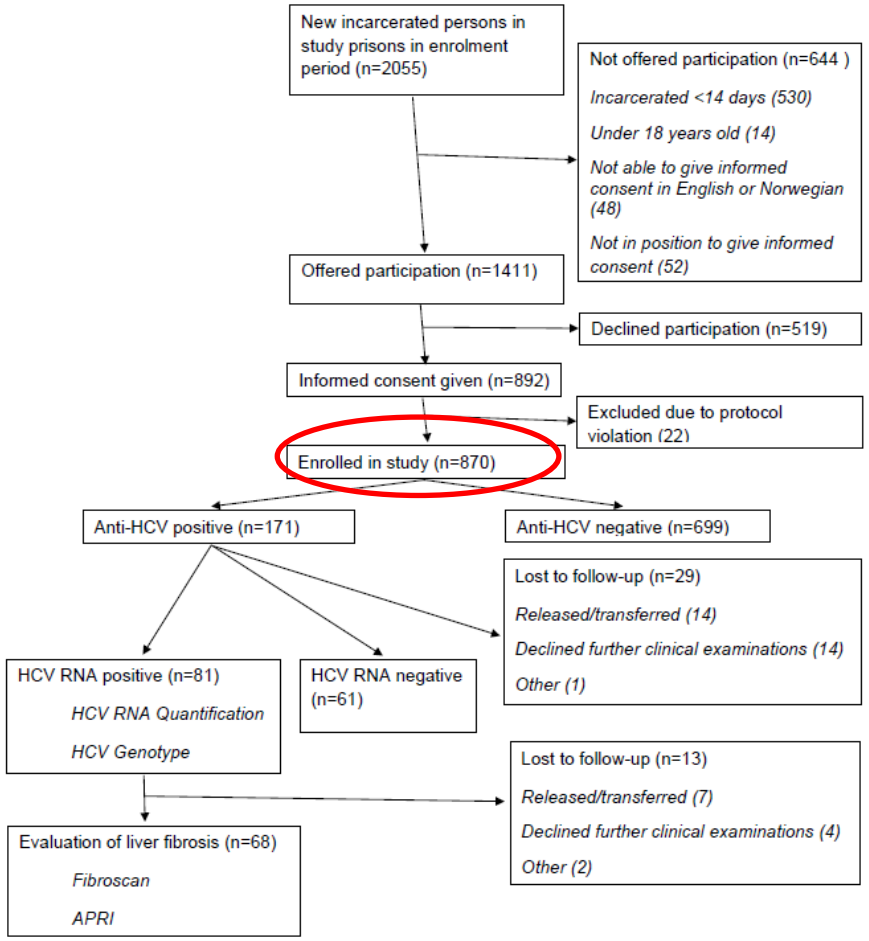
- 6 study sites
- Enrolment period 12-18 months
- Data collection in 2018-2019

Site selection:

- Geography
- Security level
- Gender

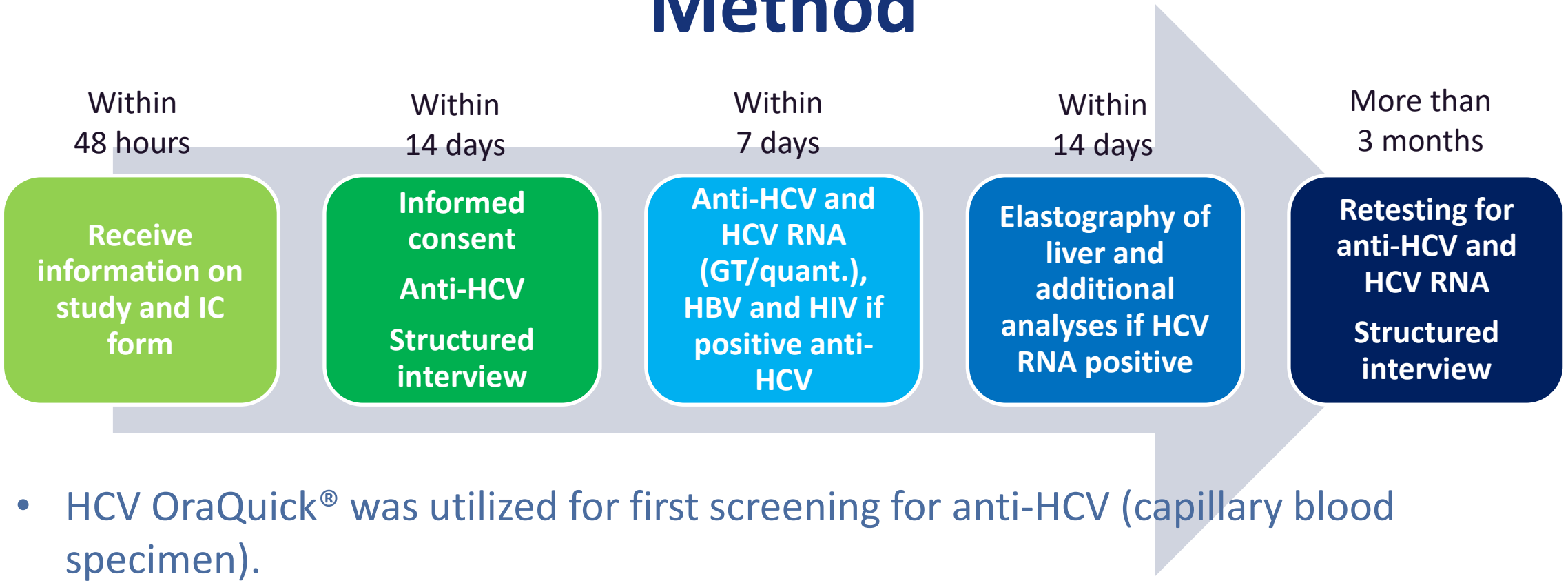


Participant Distribution



- 2055 persons incarcerated in the study prisons during the inclusion period.
- 68.7% (1411/2055) eligible for participation.
- 63.2% (892/1411) provided informed consent.
- 61.7% (870/1411) enrolled in the study.

Method



- HCV OraQuick® was utilized for first screening for anti-HCV (capillary blood specimen).
- Additional analyses were performed at local hospital laboratories.
- FibroScan 402® was utilized for transient elastography.
- Study participants were referred to standard of care by prison health services if diagnosed with chronic HCV.

Ethics

- Approval granted by Regional Committee for Medical and Health Research Ethics South-East Norway (2016/1189).
- Time-consuming and challenging to ensure informed consent.
- Access to health services – cooperation with prison health services necessary to ensure care.
- No involvement of study team in prescription of antiviral treatment – referral to standard of care.

Characteristics

Characteristics Total Study Population			%
Sex (n=870)			
	Male	780	(89.66)
	Female	90	(10.34)
Median Age (n=870)			
		35	(28-45)*
Citizenship (n=869)			
	Norwegian	685	(78.83)
	Other	184	(21.17)
Ever injecting drug use (IDU) (n=867)			
	Yes	312	(35.86)
	No	558	(64.14)
Opioid agonist treatment (OAT) (n=867)			
	Ever OAT	108	(12.46)
	Never OAT	759	(87.54)
			*IQR

Characteristics Subgroup Ever Injected Drugs			%
Substances ever injected (n=311)			
	Only AAS	50	(16.08)
	Never opioids	74	(23.79)
	Ever opioids	187	(60.13)
Active injecting (n=312)			
	Former	117	(37.50)
	Active, not recent	26	(8.33)
	Recent	169	(54.17)
Opioid agonist treatment (OAT) (n=312)			
	Present OAT	79	(25.32)
	Former OAT	27	(8.65)
	No OAT	206	(66.03)

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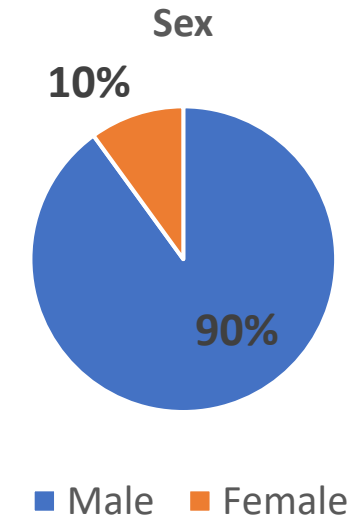
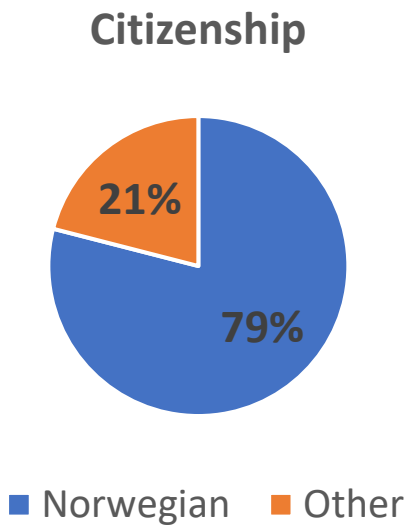
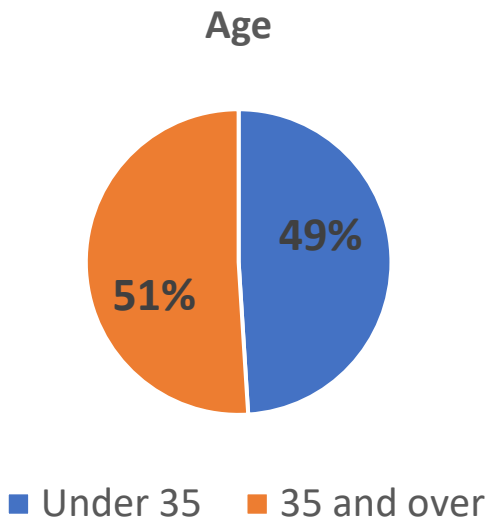
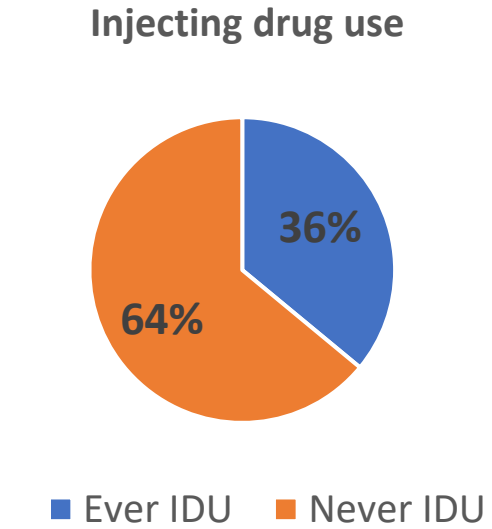
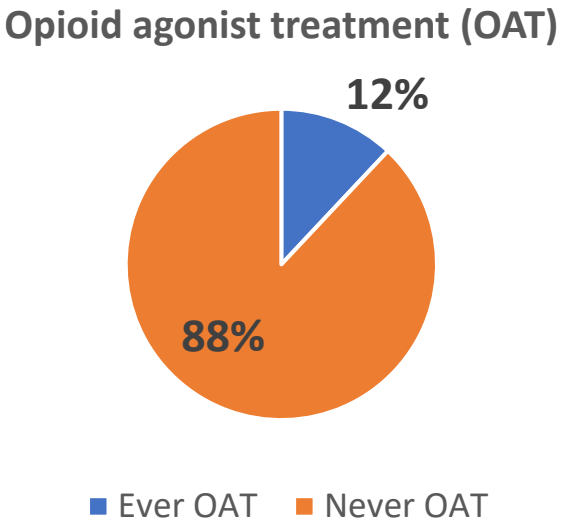
Characteristics Study Population (n=870)











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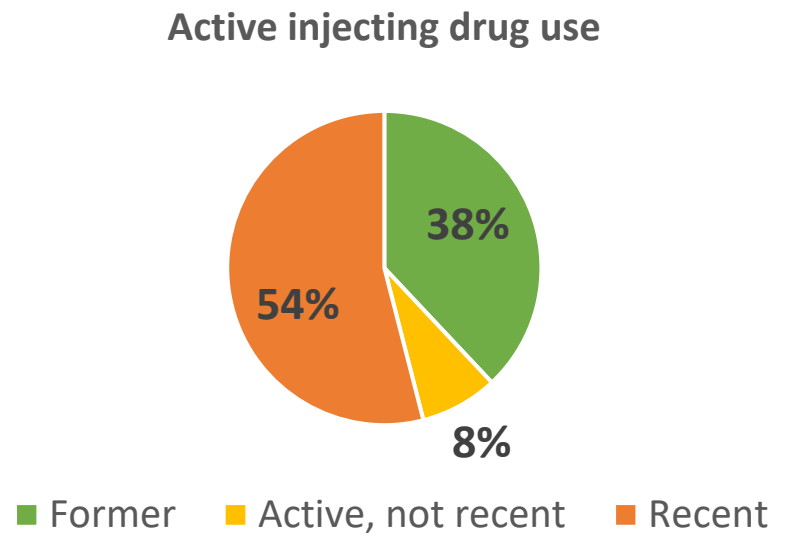
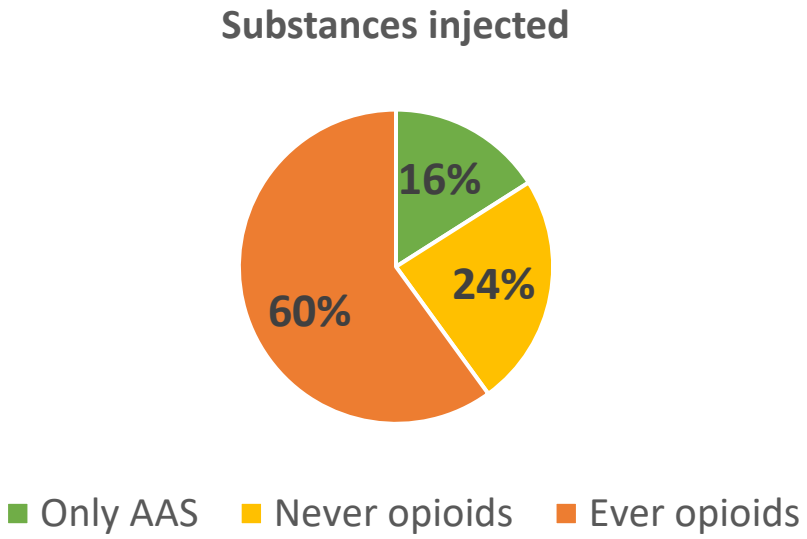
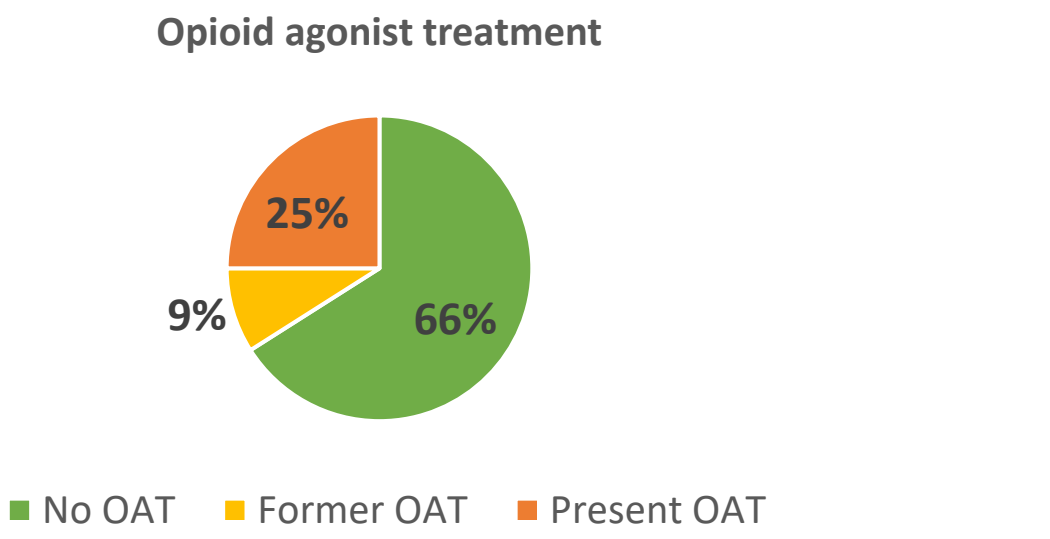
Characteristics – Subgroup ever injecting drug use (n=312)







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HCV Prevalence (1)

	Total	Ever HCV-infection (Anti-HCV+)	p	Chronic HCV-infection (HCV RNA+)	p
	n=870	171 (19.66)		81 (9.31)	
Age					
Median (IQR)	35 (28-35)	37 (32-46)		37 (32-45)	
Under 35 (%)	425 (48.85)	62 (14.59)		32 (7.53)	
35 and older (%)	445 (51.15)	109 (24.49)	<0.001	49 (11.01)	0.077
Sex					
Male (%)	780 (89.66)	138 (17.69)		66 (8.46)	
Female (%)	90 (10.34)	33 (36.67)	<0.001	15 (16.67)	0.011
Citizenship					
Norwegian (%)	685 (78.83)	160 (23.36)		76 (11.09)	
Other (%)	184 (21.17)	11 (5.98)	<0.001	5 (2.72)	0.001
Injecting drug use					
Yes (%)	312 (35.86)	167 (53.53)		81 (25.96)	
No (%)	558 (64.14)	4 (0.72)	<0.001	0 (0.00)	<0.001
Opioid agonist treatment					
Yes (%)	108 (12.41)	87 (80.56)		38 (35.19)	
No (%)	762 (87.59)	84 (11.02)	<0.001	43 (5.65)	<0.001

- Anti-HCV prevalence 19.7% (171/870)
- HCV RNA prevalence 9.3% (81/870)

- Median age 37 years for both anti-HCV- and HCV RNA positive participants.
- Prevalence of anti-HCV in participants under 35 years 14.6% (62/425) and 24.5% (109/445) in 35 years or older.
- Prevalence of HCV RNA 7.5% (32/425) in the youngest group and 11.0% (49/445) in the oldest.

HCV Prevalence (2)

	Total	Ever HCV-infection (Anti-HCV+)	p	Chronic HCV-infection (HCV RNA+)	p
	n=870	171 (19.66)		81 (9.31)	
Age					
Median (IQR)	35 (28-35)	37 (32-46)		37 (32-45)	
Under 35 (%)	425 (48.85)	62 (14.59)		32 (7.53)	
35 and older (%)	445 (51.15)	109 (24.49)	<0.001	49 (11.01)	0.077
Sex					
Male (%)	780 (89.66)	138 (17.69)		66 (8.46)	
Female (%)	90 (10.34)	33 (36.67)	<0.001	15 (16.67)	0.011
Citizenship					
Norwegian (%)	685 (78.83)	160 (23.36)		76 (11.09)	
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Injecting drug use					
Yes (%)	312 (35.86)	167 (53.53)		81 (25.96)	
No (%)	558 (64.14)	4 (0.72)	<0.001	0 (0.00)	<0.001
Opioid agonist treatment					
Yes (%)	108 (12.41)	87 (80.56)		38 (35.19)	
No (%)	762 (87.59)	84 (11.02)	<0.001	43 (5.65)	<0.001

- Anti-HCV prevalence 17.7% (138/780) in men and 36.7% (33/90) in women.
- HCV RNA prevalence 8.5% (66/780) in men and 16.7% (15/90) in women.

- Anti-HCV prevalence 23.4% (160/685) in Norwegian citizens and 6.0% (11/184) in foreign citizens.
- HCV RNA prevalence 11.1% (76/685) in Norwegians and 2.7% (5/184) in foreigners.

HCV Prevalence (3)

	Total	Ever HCV-infection (Anti-HCV+)	p	Chronic HCV-infection (HCV RNA+)	p
	n=870	171 (19.66)		81 (9.31)	
Age					
Median (IQR)	35 (28-35)	37 (32-46)		37 (32-45)	
Under 35 (%)	425 (48.85)	62 (14.59)		32 (7.53)	
35 and older (%)	445 (51.15)	109 (24.49)	<0.001	49 (11.01)	0.077
Sex					
Male (%)	780 (89.66)	138 (17.69)		66 (8.46)	
Female (%)	90 (10.34)	33 (36.67)	<0.001	15 (16.67)	0.011
Citizenship					
Norwegian (%)	685 (78.83)	160 (23.36)		76 (11.09)	
Other (%)	184 (21.17)	11 (5.98)	<0.001	5 (2.72)	0.001
Injecting drug use					
Yes (%)	312 (35.86)	167 (53.53)		81 (25.96)	
No (%)	558 (64.14)	4 (0.72)	<0.001	0 (0.00)	<0.001
Opioid agonist treatment					
Yes (%)	108 (12.41)	87 (80.56)		38 (35.19)	
No (%)	762 (87.59)	84 (11.02)	<0.001	43 (5.65)	<0.001

- Prevalence of anti-HCV 53.5% (167/312) in participants ever injected and 0.7% (4/558) in participants never injected.
- HCV RNA prevalence 26.0% (81/312) in the ever injecting group and 0.0% (0/558) in the never injecting group.

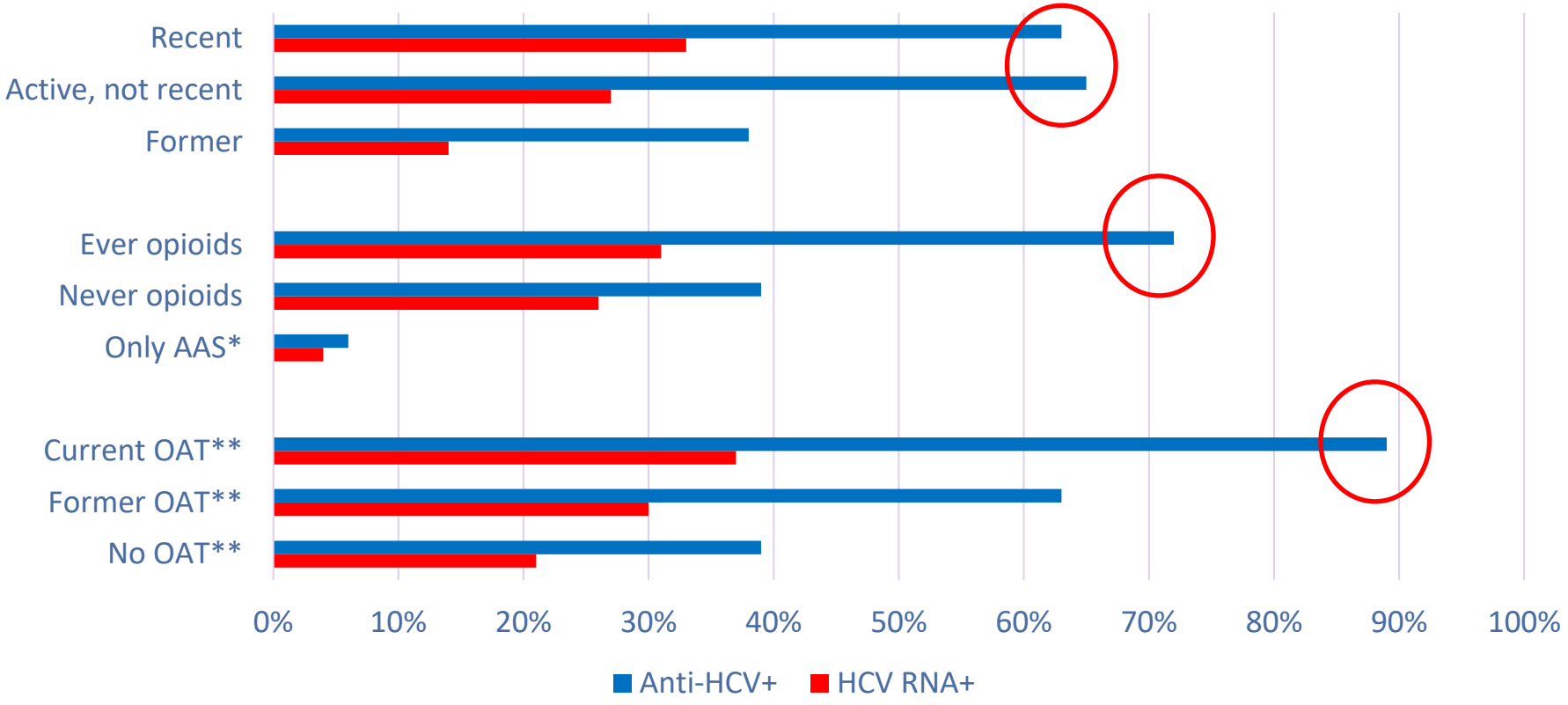
- Anti-HCV prevalence in participants ever in OAT 80.6% (87/108) and HCV RNA prevalence 35.2% (38/108).

HCV Prevalence – Subgroup ever injected drugs

		Total	(%)	Ever HCV-infection (Anti-HCV+)	(%)	Chronic HCV-infection (HCV RNA+)	(%)
Substances ever injected (n=311)							
	Only AAS*	50	(16.08)	3	(6.00)	2	(4.00)
	Never opioids	74	(23.79)	29	(39.19)	19	(25.68)
	Ever opioids	187	(60.13)	134	(71.66)	58	(31.02)
Active injecting (n=312)							
	Former	117	(37.50)	44	(37.61)	16	(13.68)
	Active, not recent	26	(8.33)	17	(65.38)	7	(26.92)
	Recent	169	(54.17)	106	(62.72)	56	(33.14)
Opioid agonist treatment (OAT) (n=312)							
	No OAT**	206	(66.03)	80	(38.83)	42	(20.39)
	Former OAT**	27	(8.65)	17	(62.96)	8	(29.63)
	Present OAT**	79	(25.32)	70	(88.61)	29	(36.71)

*=AAS: Anabolic-androgenic steroids
**OAT: Opioid Agonist Treatment

HCV Prevalence – Subgroup ever injected drugs



*=AAS: Anabolic-androgenic steroids
**OAT: Opioid Agonist Treatment

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Conclusion

- People incarcerated in Norwegian prisons are a high-risk group for HCV-infection and nearly half of the study participants exposed had chronic HCV-infection.

- Further analysis of association with risk factors for infection and treatment uptake will contribute to determining the future role of prisons in the elimination of HCV in Norway.