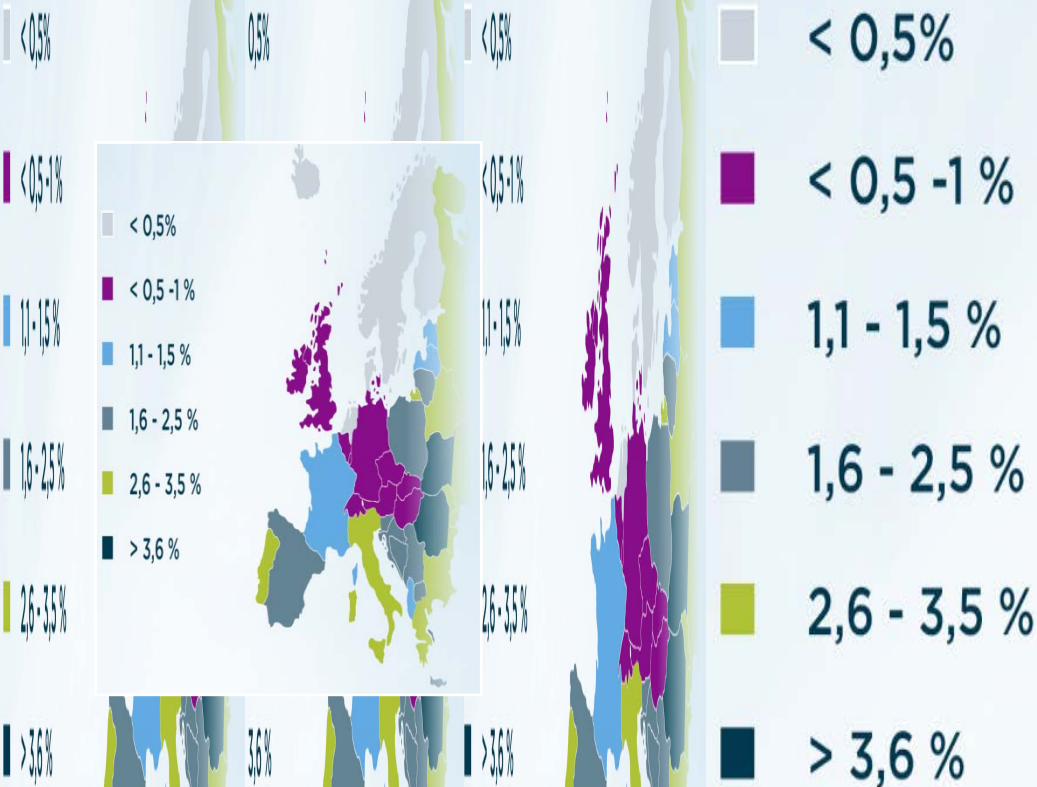


HIGH RECURRENCE RATE OF HEPATITIS C INFECTION AFTER TREATMENT IN PRISON INMATES IN LUXEMBOURG

V. Arendt ^{1, 3}, P. Hoffman ², JH François¹,
L Guillorit ³, J. Meyers², P. Leider¹, D.
struck³, T. Staub¹, C. Devaux ³
¹Centre Hospitalier de Luxembourg,
Luxembourg. ²Centre Pénitentiaire de
Luxembourg, Schrassig. ³, CRP-Santé
Luxembourg, Luxembourg.

- Hepatitis C in Luxembourg
- Difficulties in treating hepatitis C patients in prison and our approach
- Our study results and discussion

Estimated Prevalence of hepatitis C in Europe



Luxembourg: 0,7%
3500-4000 HCV+ patients



RELIS: (Origer, 2013) +/- 2400 problematic drug users in Luxembourg
>=half under OST

Seroprevalences for blood-borne viruses in IDUs in 2006 in Luxembourg

Table 2 Seroprevalence (%)

		OTC N/Ntotal	ITC N/Ntotal	PC N/Ntotal	IDUs N/Ntotal	nIDUs % N/Ntotal
HBV (cured or active infection)	Active HBV (HBs ag+)	1.5 2/130	0 0/54	7.0 8/115	3.9 10/254	0 0/45
	Cured HBV (HBs ab+, HBc ab+)	13.1 17/130	14.8 8/54	23.5 27/115	19.3 49/254	6.7 3/45
	Total HBVab *	22.3 29/130	16.7 9/54	34.8 40/115	29.1 74/254	8.9 4/45
HBV vaccination (HBs ab+)		39.2 51/130	57.4 31/54	45.2 52/115	46.1 117/254	37.8 17/45
HBV seropositivity (all types)		61.5 80/130	74.1 40/54	80.0 92/115	75.2 191/254	46.7 21/45
HCV (Elisa +, RIBA +) HCVab		57.3 75/131	75.4 46/61	86.3 107/124	81.3 218/268	19.1 9/47
HAV (IgG+) HAVab		54.7 70/128	57.1 24/42	68.3 41/60	57.1 108/189	65.9 27/41
HIV-1 HIVab		1.5 2/130	0 0/49	7.7 5/65	2.5 5/202	4.8 2/42

*Including 18 cases with HBc antibody only.

Hepatitis C virus genotypes distribution and transmission risk factors in Luxembourg from 1991 to 2006

Francois Roman, Karin Hawotte, Daniel Struck, Anne-Marie Ternes, Jean-Yves Servais, Vic Arendt, Patrick Hoffman, Robert Hemmer, Thérèse Staub, Carole Seguin-Devaux, Jean-Claude Schmit

Table 1 Patient details and HCV genotype distribution in the overall population, in the Centre Pénitentiaire of Luxembourg (CPL) and in the general population

Variable	Overall	CPL	General
<i>n</i> (%)	802 (100)	228 (28.4)	574 (71.6)
Sex ratio	2.2	17.8	1.44
Age (% less than 40 yr)	49.6	77.6	38.5
Genotype			
1	428 (53.4)	102 (44.7)	326 (56.8)
2	38 (4.7)	8 (3.5)	30 (5.2)
3	264 (33)	106 (46.5)	158 (27.5)
4	67 (8.3)	12 (5.3)	55 (9.6)
5	5 (0.6)	0	5 (0.9)

- Hepatitis C in Luxembourg
- Difficulties in treating hepatitis C patients in prison and our approach
- Our study results

Difficulties in treating hepatitis C patients in prison

- Substance misuse is common and ongoing in prison
 - **Needle exchange programme** effective to avoid new infections in prison
 - Opioid substitution treatment effective in prison
 - A relapse of IDU not a reason to stop HCV treatment
 - Alcohol dependence before prison is also common

Difficulties in treating hepatitis C patients in prison

- Mental health issues common among HCV+ prison inmates: personality disorders, depression, psychosis
 - **Systematic psychiatric evaluation** before Interferon treatment is the rule, however rarely contraindication for treatment
 - Need for psychologic follow-up during treatment

Difficulties in treating hepatitis C patients in prison

- Access to diagnostic workup:
 - **screening** is proposed on admission: >95% accept
 - **Viral load, genotype**, IL-28 (difficulties of venous access)
 - **Abdominal ultrasound** performed in prison by a radiologist (1x/month)
 - Fibrosis staging: Difficulties for biopsies → purchase of **Fibroscan** in 2008 by the prison administration; done by nurses and physicians

Difficulties for HCV tt. in prison

- Specialist consultation:

- **ID or GI physician**: 2-3x/month in the prison: sees all HCV+ patients annually (if VL undetectable) or biannually (VL detectable or monthly (if under treatment))
- **Dedicated nurses** (transmissible diseases): 2 nurses take part of their working hours to
 - follow HCV patients,
 - taking questionnaires, do data management
 - supervision of treatment, alert physician on problems under treatment

In prison « all is well », but what thereafter..?

- From prison to community:
 - Frequent relapse into drug consumption and risk of rapid reinfection
 - Social security
 - Housing
 - Methadone substitution
 - HIV-berodung (hepatitis, STIs and HIV)

- Hepatitis C in Luxembourg
- Difficulties in treating hepatitis C patients in prison and our approach
- Our study results

Treatment of HCV in prison in Luxembourg 2003-2012

- Objectives:

- To analyse outcomes of treatment of HCV in the Luxembourg prison population: SVR 12 and SVR 24
- To analyse reinfection rate after treatment
- Definition of reinfection: 1 positive viral load in a patient who had achieved SVR at 12 weeks

Methods :

- All prisoners were offered screening for hepatitis, STIs and tuberculosis.
- Between January 2003 and December 2012, 665 patients were tested positive for HCV, of which 79 were not aware of their infection before prison.
- During the study period, the standard of care treatment was daily distribution of Ribavirin and

Methods

- Sustained virological response was evaluated 3 and 6 months after the end of the therapy.
- HCV viral load was measured using the cobas AmpliPrep/cobas TaqMan HCV Test v 2.0, HCV (Roche).
- Genotype was determined in 482 patients using INNO-LiPA HCV 2.0 (Innogenetics).

Results :

- During the study period, 209/665 prisoners (31.4%) started therapy, mainly injecting drug users.

- Mean age 43 (21-65)
- mean total follow-up 3269 days
- male 91%

- Genotype (GT) distribution was:

- GT1 : 52%;
- GT3 : 41.3%;
- others : 6.0%

Results:

- 209 treated
- 43 lost : tt discontinuation or early discharge and lost to follow-up
- 44 treatment failures.
- On an intention to treat basis, 105 prisoners (50.2%) achieved sustained virological response at ≥ 24 weeks post therapy;
- another 17 patients (8.1%) had an SVR 12 but no week 24 sample available,

Results: reinfection

- After a mean follow-up of 3.2 years following therapy, 21 cured patients exhibited another detectable viral load, giving a **reinfection rate of 17,2%** (6/21 were confirmed by a change of genotype)

Conclusions :

- A stay in prison is an effective opportunity to treat a group of HCV –infected patients which has otherwise very limited access to therapy.
- Although a good success rate of HCV therapy was observed, the rate of reinfection after discharge from prison was high.

Reinfection:

- No protective immunity after spontaneous or treatment-induced viral clearance
- Dual infections and superinfections do exist and reinfection with same or different genotype not uncommon

Treatment of Hepatitis C Virus Infection Among People Who Are Actively Injecting Drugs: A Systematic Review and Meta-analysis Esther J. Aspinall (CID 2013;57:Supplement 2)

- Among 6 studies on reinfection: 0,8-4,7 per 100 person years of observation
- Meta-analysis (Aspinall): pooled estimate of reinfection: 2,36 per 100PY
- Among those with IDU post-treatment: 6,4 per 100 PY (2,5-16,7)

J Hepatol. 2013 Jul;59(1):45-51.

Hepatitis C virus reinfection among prisoners with sustained virological response after treatment for chronic hepatitis C.

[Marco A](#)

- 109 prison inmates who had previously achieved SVR
- 9 reinfections after a median follow-up of 1,7 years
- 5,7 per 100 person-years

Plan for the future:

- reanalyse data per 100 patient years post end of therapy
- Reinforce follow-up after discharge from prison and access to OST to avoid reinfections