Sistema Socio Sanitario
Ospedale Niguarda
Regione Lombardia

Massimo Puoti

Dept. of Infectious Diseases

ASST Grande Ospedale Metroplitano

Niguarda

Milan, Italy

HCV/HIV COINFECTION: WHAT IS LEARNED FROM PITER AND COHORT STUDIES

Disclosures

- Honoraria for consulting or speaking (past 5 years): AbbVie, Beckman Coulter , BMS, Janssen, Gilead Sciences, MSD, Roche, and ViiV

- Research grants (past 5 years) : Gilead Sciences, ViiV, Roche, Pfizer Astellas and Novartis

HCV/HIV COINFECTION WHAT IS LEARNED FROM PITER AND COHORT STUDIES

- **TWO DIFFERENT POPULATIONS: DATA FROM PITER COHORT**
- **SMILAR TREATMENT RESPONSE?**
- **ACCESS TO TREATMENT: ISSUES IN HIV COINFECTED PATIENTS**

HCV/HIV COINFECTION WHAT IS LEARNED FROM PITER AND COHORT STUDIES

- **TWO DIFFERENT POPULATIONS: DATA FROM PITER COHORT**
- **SMILAR TREATMENT RESPONSE?**
- **ACCESS TO TREATMENT: ISSUES IN HIV COINFECTED PATIENTS**

PITER

Piattaforma Italiana per lo studio
della Terapia delle Epatiti viRali.

Clinical and virological characteristics of HIV/HCV coinfected versus HCV monoinfected patients: an interim evaluation in the PITER cohort (data updated On April 2019)

Data elaborated by Luigina Ferrigno & Maria Giovanna Quaranta

PITER
Piattaforma Italiana per lo studio della Terapia delle Epatiti viRali.

Aim

We aimed to assess the epidemiological, clinical and treatment aspects in a real-life cohort of patients with HIV/HCV coinfection compared to HCV monoinfected patients, following viral eradication due to DAA treatment

PITER
Piattaforma Italiana per lo studio della Terapia delle Epatiti viRali.

Methods

- We included in the analysis any HIV/HCV coinfected patients and HCV infected patients with known HIV negative status, consecutively enrolled in PITER between April 2014 and March 2019, who have started DAA treatment and with available follow-up (at least 6 months).

- Patient's main baseline (pre-treatment) characteristics were reported as median and range or as proportions for continuous and categorical variables, respectively. The Mann-Whitney rank-sum test was used for continuous variables to assess differences between distribution, and the Chi-squared test was used for comparisons of proportions. A p value <0.05 was considered significant.

- HCC appearance was evaluated in patients with pre-treatment diagnosis of liver chirrosis and without the HCC diagnosis at baseline. Variables independently associated to de novo HCC appearance after achieving SVR12 were evaluated by Cox regression analysis.

PITER
Piattaforma Italiana per lo studio della Terapia delle Epatiti viRali.

RESULTS

Main baseline characteristics of HIV/HCV co-infected and HCV mono-infected patients (1)

	HCV/HIV co-infected (N=197*)		HCV mono-infected (N=2726*)		
Quantitative variables	Median	Range	Median	Range	p**
Age	52	32 - 66	62	20 - 86	< 0.001
ALT	55.5	0.0 - 301.0	62.0	0.0 - 969.0	> 0.05
AST	53.0	0.0 - 371.0	56.0	0.0 - 652.0	> 0.05
Glycemia	98.5	64.0 - 373.0	98.0	0.9 - 351.0	> 0.05

* For some variables inconsistencies are due to missing values

** p value Mann–Whitney rank-sum test

PITER
Piattaforma Italiana per lo studio della Terapia delle Epatiti viRali.

RESULTS

Main baseline characteristics of HIV/HCV co-infected and HCV mono-infected patients (2)

		HCV/HIV co-infected (N=197*)		HCV mono-infected (N=2726*)		
Categorical variables		N.	%	N.	%	P**
Sex	Male	147	74.6	1484	54.4	< 0.001
	Female	50	25.4	1241	45.5	
	Transgender	0	0.0	1	0.04	
BMI	Underweight	9	4.9	45	1.6	< 0.001
	Normal	129	70.5	1273	46.8	
	Overweight	38	20.8	1110	40.8	
	Obese	7	3.8	293	10.8	
Alcohol use	Never	85	48.6	1808	67.8	< 0.001
	Current	54	30.9	314	11.8	
	Past	36	20.6	544	20.4	
Genotype	nd	2	1.0	13	0.5	< 0.001
	1 (Non subtyped)	11	5.6	67	2.5	
	1a	60	30.5	353	12.9	
	1b	28	14.2	1403	51.5	
	2	7	3.5	440	16.1	
	3	54	27.4	273	10.0	
	4	35	17.8	174	6.4	
	5	0	0.0	3	0.1	
Cirrhosis	Yes	92	47.2	1284	48.1	> 0.05
	No	103	52.8	1387	51.9	
Diabetes	Yes	18	9.1	400	14.7	< 0.05
	No	179	90.9	2326	85.3	

* For some variables inconsistencies are due to missing values

** p value Chi-square test

RESULTS

Main baseline characteristics of HIV/HCV co-infected and HCV mono-infected patients with liver cirrhosis (1)

	HCV/HIV co-infected (N=92*)		HCV mono-infected (N=1284*)		
Quantitative variables	Median	Range	Median	Range	p**
Age	52	36 - 55	63	28 - 86	< 0.001
ALT	57.0	0.0 - 284.0	74.0	0.0 - 797.0	< 0.05
AST	59.0	0.0 - 371.0	72.0	0.0 - 652.0	> 0.05
Glycemia	99.0	68.0 - 373.0	101.0	1.0 - 351.0	> 0.05

PITER
Piattaforma Italiana per lo studio della Terapia delle Epatiti viRali.

RESULTS

Main baseline characteristics of HIV/HCV co-infected and HCV mono-infected patients with liver cirrhosis (2)

		HCV/HIV co-infected (N=92*)		HCV mono-infected (N=1284*)		
Categorical variables		N.	%	N.	(%)	P**
Sex	Male	73	79.3	763	59.4	< 0.001
	Female	19	20.7	520	40.5	
	Transgender	0	0.0	1	0.01	
BMI	Underweight	4	4.5	13	1.0	< 0.001
	Normal	63	71.6	516	40.2	
	Overweight	16	18.2	578	45.1	
	Obese	5	5.7	176	13.7	
Alcohol use	Never	39	50.0	812	64.6	< 0.001
	Current	21	26.9	119	9.5	
	Past	18	23.1	326	25.9	
Genotype	nd	0	0.0	7	0.5	< 0.001
	1 (Non subtyped)	3	3.2	29	2.3	
	1a	26	28.3	164	12.8	
	1b	13	14.1	706	55.0	
	2	3	3.3	163	12.7	
	3	33	35.9	135	10.5	
	4	14	15.2	79	6.2	
	5	0	0.0	1	0.1	
Diabetes	Yes	9	9.8	275	21.4	< 0.05
	No	83	90.2	1009	78.6	
Child-pugh score	A-5	28	47.5	764	68.4	< 0.001
	A-6	12	20.3	242	21.7	
	B-7	9	15.2	67	6.0	
	B-8	5	8.5	29	2.6	
	B-9	3	5.1	13	1.1	
	C-10	2	3.4	2	0.2	
HCC	Yes	2	2.2	96	7.5	> 0.05
	No	90	97.8	1188	92.5	

* For some variables inconsistencies are due to missing values
** p value Chi-square test

PITER
Piattaforma Italiana per lo studio della Terapia delle Epatiti viRali.

RESULTS

Variables independently associated to de-novo HCC appearance following SVR12 achievement

	Crude HR	95% CI	Adjusted HR	95% CI
HIV infection	0.61	0.15 - 2.51	0.53	0.06 - 4.41
Age (increasing years)	**1.05**	**1.02 - 1.09**	**1.06**	**1.02 - 1.10**
ALT (increasing U/l)	1.00	0.99 - 1.00	0.99	0.98 - 1.00
AST (increasing U/l)	1.00	0.99 - 1.00	1.01	0.99 - 1.01
Genotype (3 vs others)	**1.27**	**0.57 - 2.82**	**2.67**	**1.01 - 7.08**
Diabetes	1.43	0.76 - 2.71	1.73	0.85 - 3.54
Child-pugh score (increasing units)	**1.43**	**1.09 - 1.88**	**1.49**	**1.07 - 2.06**

PITER
Piattaforma Italiana per lo studio della Terapia delle Epatiti viRali.

Conclusion

- Age, genotype 3 and liver disease severity (in terms of Child Pugh score deterioration) result as factors independently associated with *de novo* HCC occurrence in DAA treated patients following SVR12 achievement.

- HIV coinfection is not associated with HCC apparence, after adjusting for considered confounding factors.

HCV/HIV COINFECTION WHAT IS LEARNED FROM PITER AND COHORT STUDIES

- **TWO DIFFERENT POPULATIONS: DATA FROM PITER COHORT**
- **SMILAR TREATMENT RESPONSE?**
- **ACCESS TO TREATMENT: ISSUES IN HIV COINFECTED PATIENTS**

Research Article

EASL JOURNAL OF HEPATOLOGY

Viral Hepatitis

Efficacy and safety of direct-acting antiviral regimens in HIV/HCV-co-infected patients – French ANRS CO13 HEPAVIH cohort

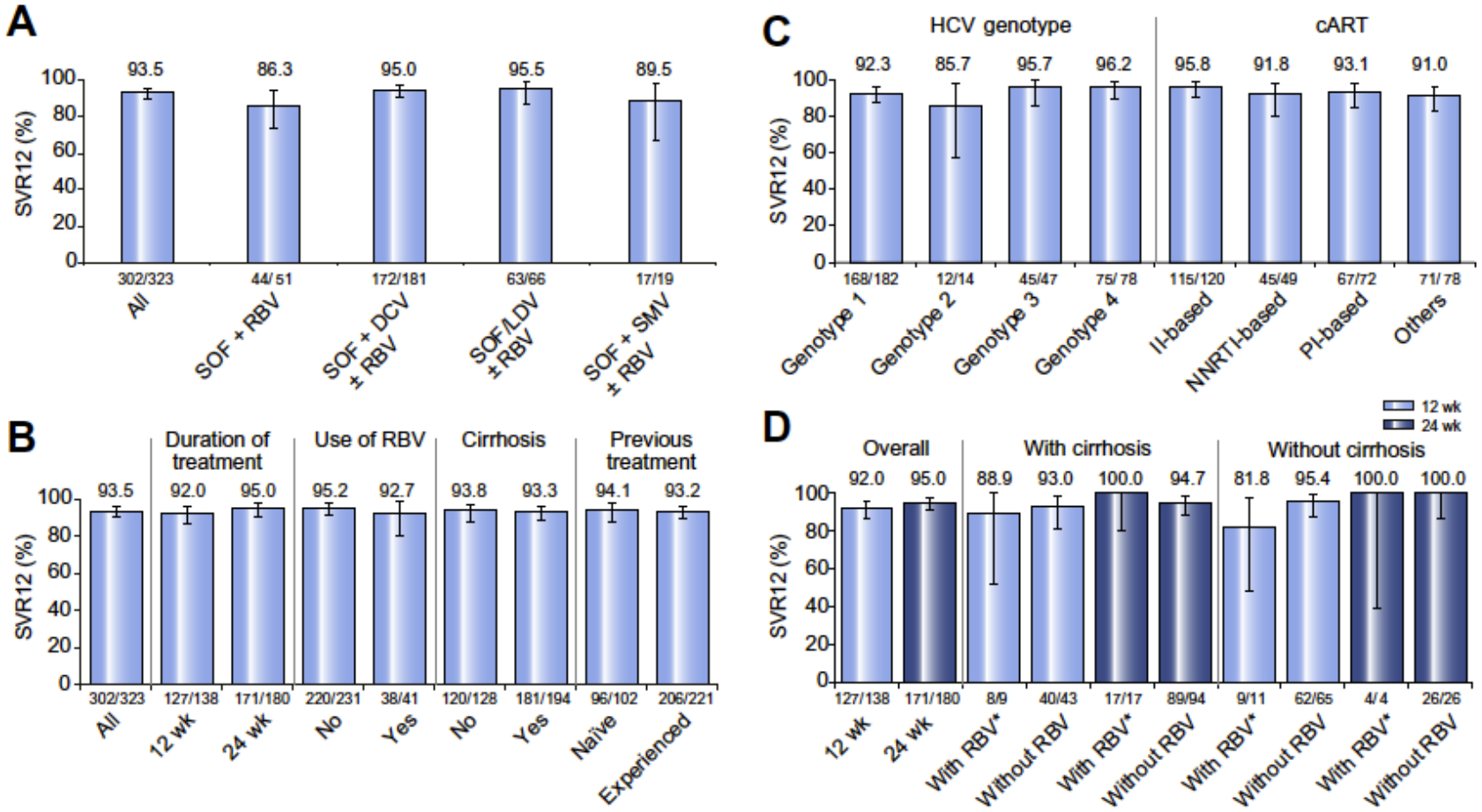
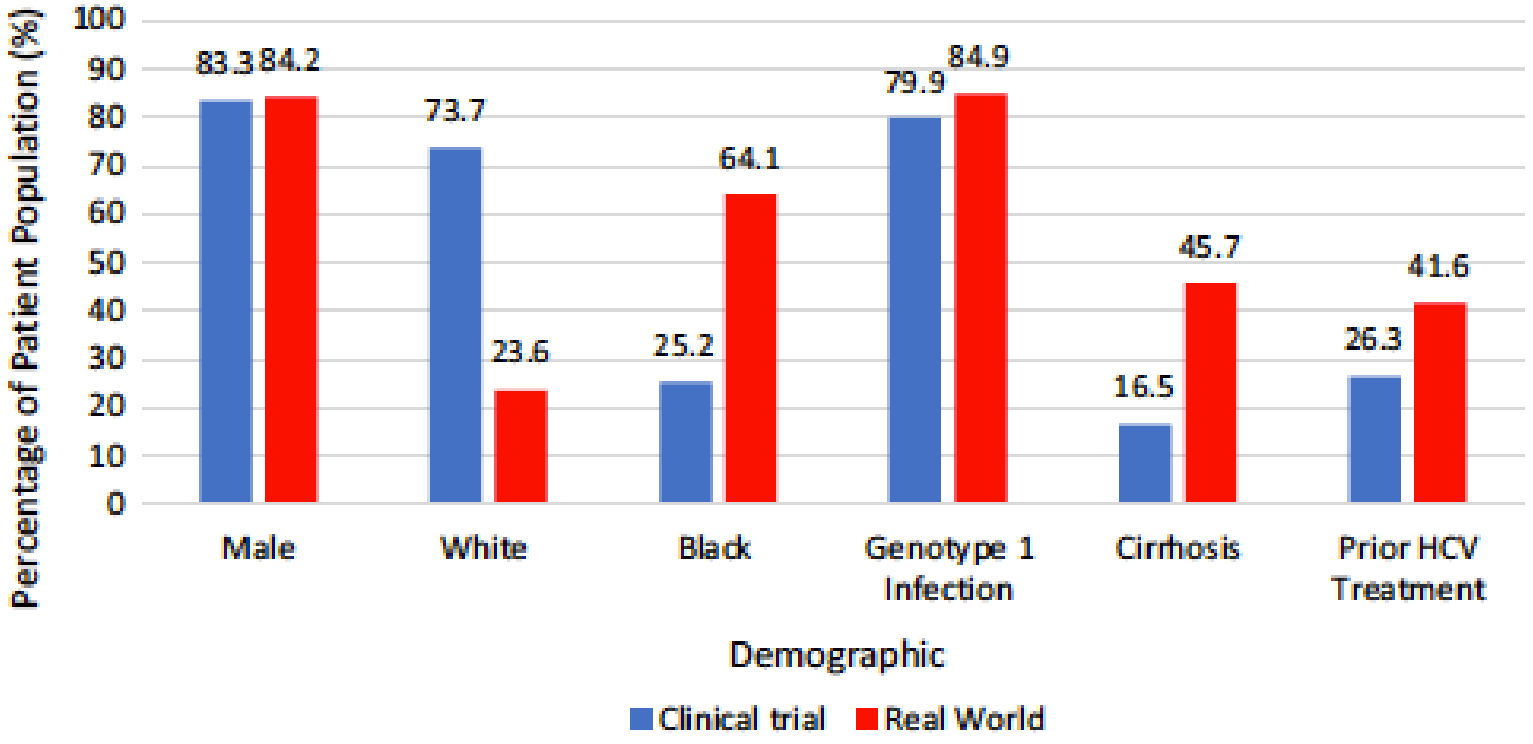


Fig. 1. Frequencies of sustained virological responses 12 weeks after end of therapy (SVR12). (A) Data grouped according to prescribed DAA regimen which was evaluated in adjusted exact logistic regression analysis (see Table 2A, B). (B*, C and D*) Data grouped according to the selected covariables which were evaluated in adjusted exact logistic regression analysis (see Table 2A, B). *Patients receiving SOF + RBV have been excluded from this analysis. Vertical bars represent 95% confidence intervals calculated using the exact binomial distribution.

Similar Sustained Virologic Response in Real-World and Clinical Trial Studies of Hepatitis C/Human Immunodeficiency Virus Coinfection

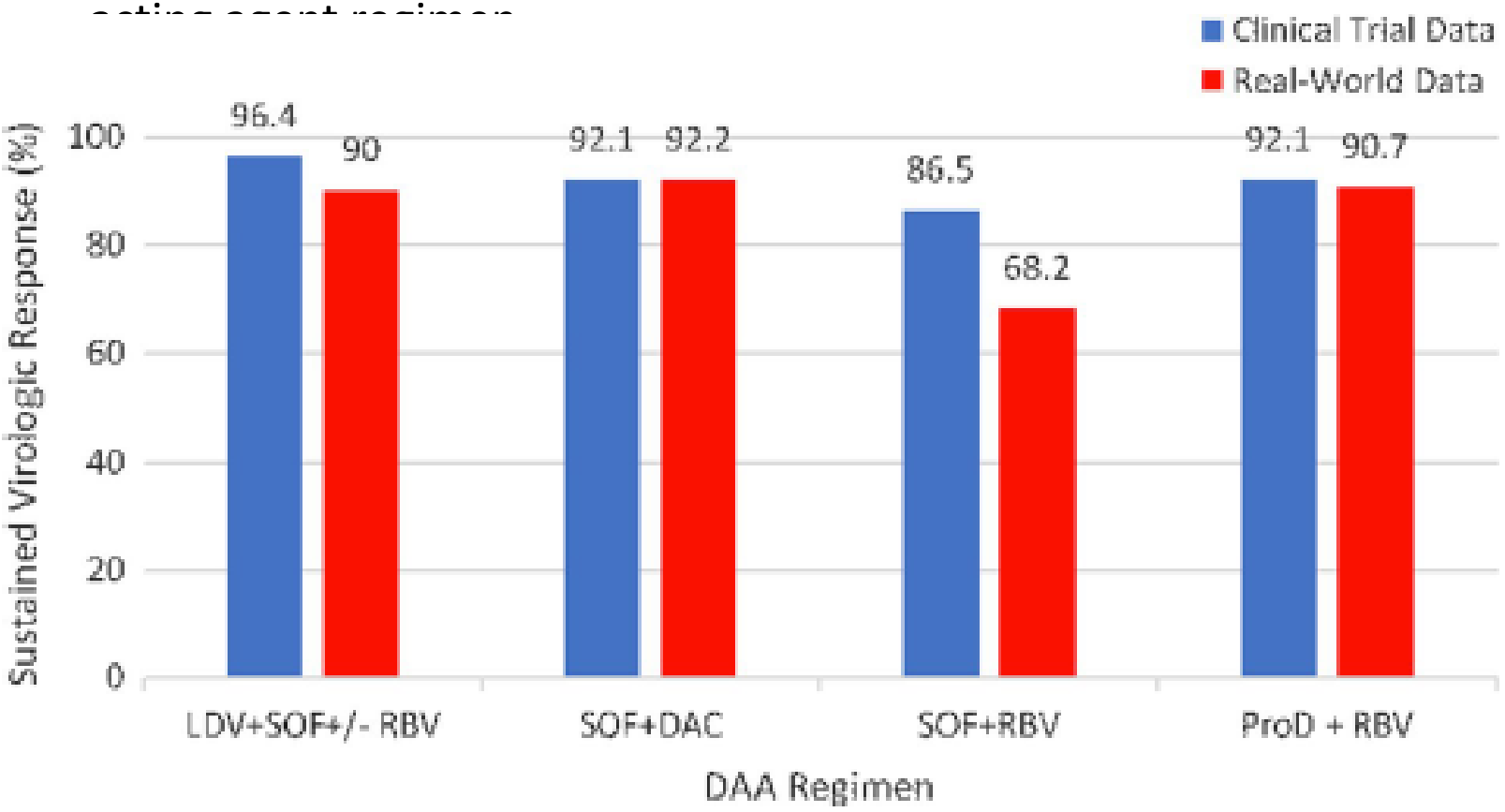
- Comparison of patient demographics between clinical trials and real-world data



Sikavi C et al Digestive Diseases and Sciences (2018) 63:2829–2839

Similar Sustained Virologic Response in Real-World and Clinical Trial Studies of Hepatitis C/Human Immunodeficiency Virus Coinfection

- Sustained viral response for clinical trial versus realworld data by direct-acting agent regimen



Sikavi C et al Digestive Diseases and Sciences (2018) 63:2829–2839

Similar Sustained Virologic Response in Real-World and Clinical Trial Studies of Hepatitis C/Human Immunodeficiency Virus Coinfection

- Comparison of efficacy and effectiveness of various subgroups

Subgroup	Efficacy [CI]	Effectiveness [CI]	Relative Risk [CI]	*p* value
DAA Regimen				
Ledipasvir/Sofosbuvir ± Ribavirin	0.964 [0.94–0.98]	0.900 [0.88–0.92]	0.93 [0.91–0.96]	0.0001
Sofosbuvir and Daclatasvir ± Ribavirin	0.921 [0.88–0.95]	0.922 [0.89–0.94]		1.0000
Sofosbuvir and Ribavirin	0.865 [0.82–0.92]	0.682 [0.56–0.79]	0.79 [0.66–0.94]	0.0009
ProD + RBV	0.921 [0.82–0.97]	0.907 [0.84–0.95]		1.0000
African-American	0.919 [0.88–0.95]	0.921 [0.90–0.94]		0.9000
Cirrhosis	0.884 [0.83–0.92]	0.884 [0.86–0.90]		1.0000
Prior treatment experience	0.945 [0.92–0.97]	0.900 [0.88–0.92]	0.95 [0.92–0.98]	0.0090
Genotype 1	0.929 [0.91–0.94]	0.914 [0.90–0.93]		0.1560
Genotype other than 1	0.909 [0.87–0.94]	0.918 [0.88–0.94]		0.7720

ProD + RBV ombitasvir, paritaprevir co-dosed with ritonavir, and dasabuvir, with ribavirin, *CI* 95% confidence interval

Sikavi C et al Digestive Diseases and Sciences (2018) 63:2829–2839

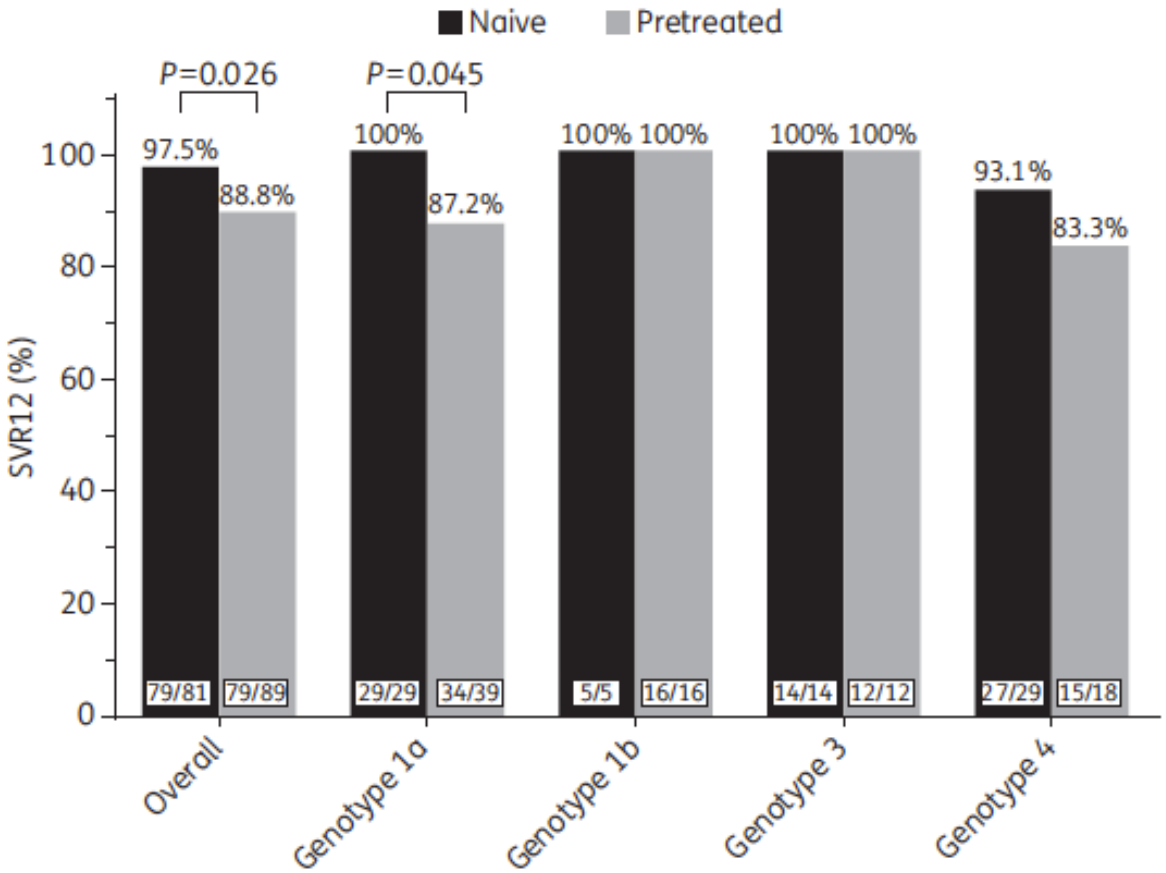
J Antimicrob Chemother 2017; **72**: 2850–2856
doi:10.1093/jac/dkx223 Advance Access publication 13 July 2017

Journal of Antimicrobial Chemotherapy

Efficacy and safety of direct antiviral agents in a cohort of cirrhotic HCV/HIV-coinfected patients

Jordi Navarro[1,2]*, Montserrat Laguno[3], Helem Haydee Vilchez[4], Jose M. Guardiola[5], Jose A. Carrion[6], Luis Force[7], Mireia Cairó[8], Carmen Cifuentes[9], Josep Vilaró[10], Josep Cucurull[11], Andrés Marco[12], Mercè Roget[13], Eva Erice[14] and Manuel Crespo[15] on behalf of the Catalano-Balear Study Group†

[1]Hospital Universitari de la Vall d'Hebron, Universitat Autònoma de Barcelona, Barcelona, España; [2]Institut de Recerca Hospital Vall d'Hebron, Barcelona, España; [3]Hospital Clínic de Barcelona, Barcelona, España; [4]Hospital Universitari de Son Espases, Palma de Mallorca, España; [5]Hospital de la Santa Creu i Sant Pau, Barcelona, España; [6]Hospital del Mar, Institut Hospital del Mar d'Investigacions Mèdiques (IMIM), Universitat Autònoma de Barcelona (UAB), Barcelona, España; [7]Hospital de Mataró, Mataró, España; [8]Hospital Universitari Mútua de Terrassa, Terrassa, España; [9]Hospital de Son Llàtzer, Palma de Mallorca, España; [10]Hospital Universitari de Vic, Vic, España; [11]Hospital de Figueres, Figueres, España; [12]Programa Penitenciari, Institut Català de la Salut, Barcelona, España; [13]Consorci Sanitari de Terrassa, Terrassa, España; [14]Fundació privada Hospital de Mollet, Mollet del Vallès, España; [15]Complexo Hospitalario Universitario de Vigo, IIS Galicia Sur, España



ORIGINAL ARTICLE

Gut and Liver, Vol. 12, No. 6, November 2018, pp. 694-703

Real-World Clinical Efficacy and Tolerability of Direct-Acting Antivirals in Hepatitis C Monoinfection Compared to Hepatitis C/Human Immunodeficiency Virus Coinfection in a Community Care Setting

Vijay Gayam[1], Muhammad Rajib Hossain[1], Mazin Khalid[1], Sandipan Chakaraborty[1], Osama Mukhtar[1], Sumit Dahal[1], Amrendra Kumar Mandal[1], Arshpal Gill[1], Pavani Garlapati[1], Sreedevi Ramakrishnaiah[1], Khalid Mowyad[2], Jagannath Sherigar[3], Mohammed Mansour[1], and Smruti Mohanty[3]

[1]Department of Medicine and Gastroenterology, Interfaith Medical Center, New York, NY, [2]Department of Medicine, Detroit Medical Center,

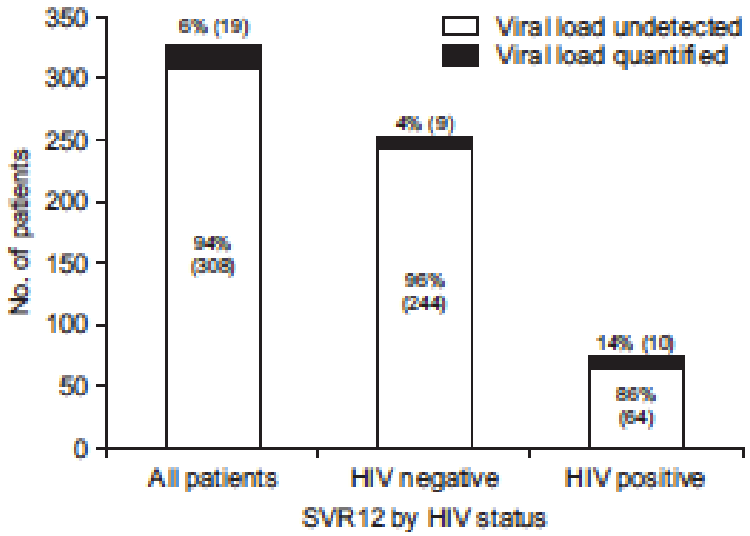


Fig. 2. Treatment response in each group measured by overall sustained virologic response at 12 weeks post-treatment (SVR12). HIV, human immunodeficiency virus.

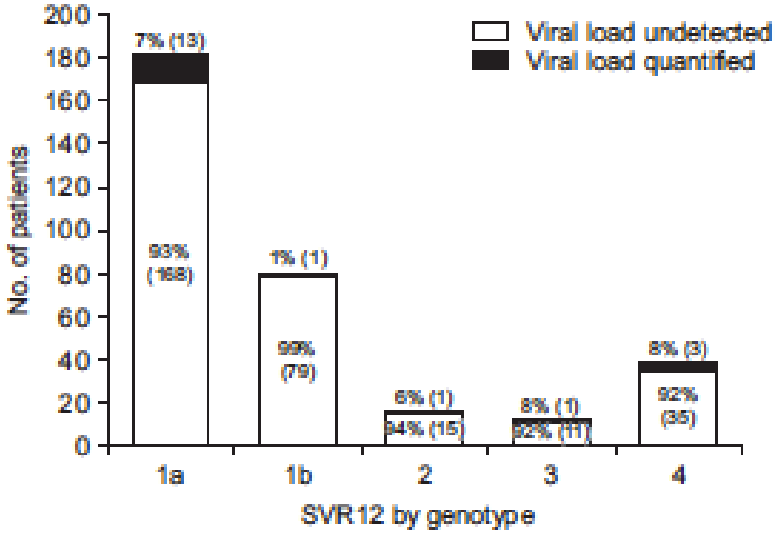


Fig. 3. Sustained virologic response at 12 weeks post-treatment (SVR12) by genotype.

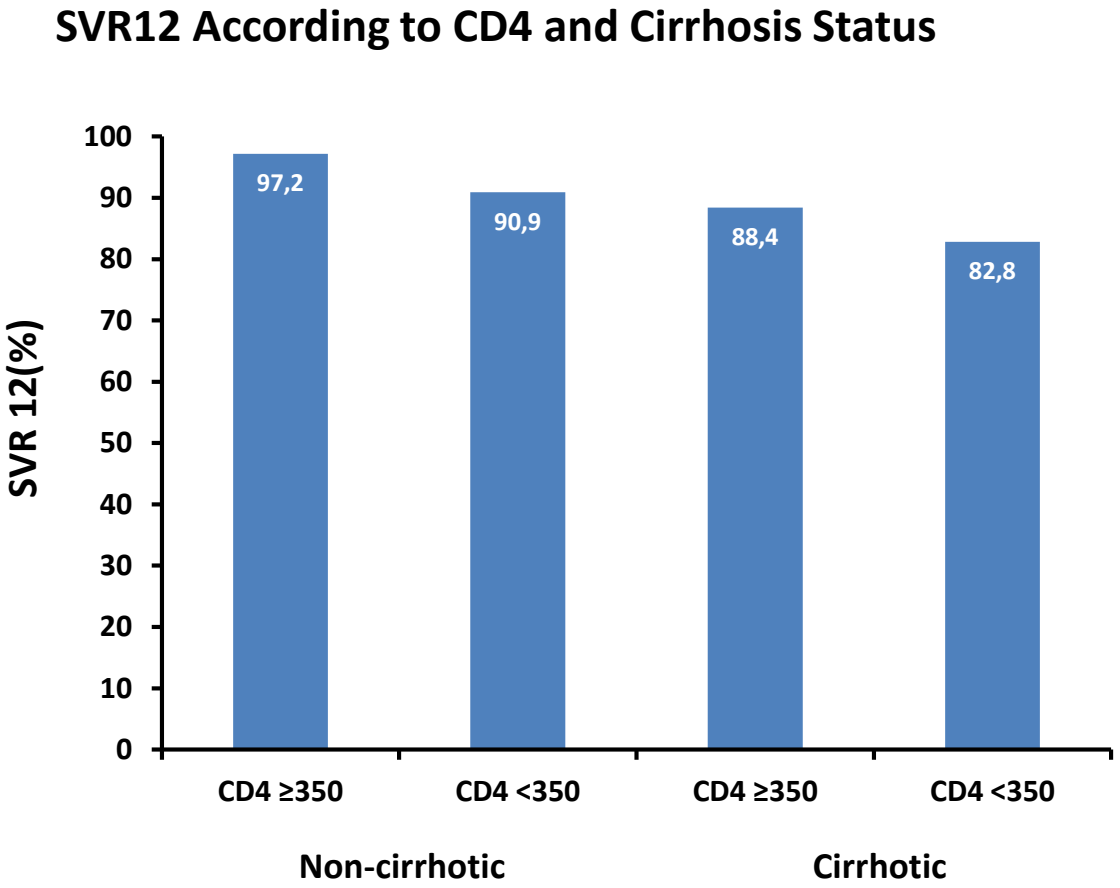
HIV-coinfected patients respond worse to direct-acting antiviralbased therapy against chronic hepatitis C in real life than HCV monoinfected individuals: a prospective cohort study

- In a prospective multicohort study, patients who initiated DAA-based therapy at the Infectious Disease Units of 33 hospitals throughout Spain were included.
- Relaps after end-of-treatment response to IFN-free therapy was observed in 3/208 (1.4%) HCV monoinfected subjects and 10/231 (4.4%) HIV/HCV-coinfected individuals (p = 0.075).
- In a multivariate analysis adjusted for age, sex, transmission route, body-mass index, HCV genotype, and cirrhosis, the absence of HIV-coinfection (adjusted odds ratio: 3.367; 95% confidence interval: 1.15-9.854; p = 0.027) was independently associated with SVR12 to IFN-free therapy.

Neukam K et al HIV Clin Trials 2017; 18: 1126-34

DAA Really Similarly Effective in HIV Coinfection?

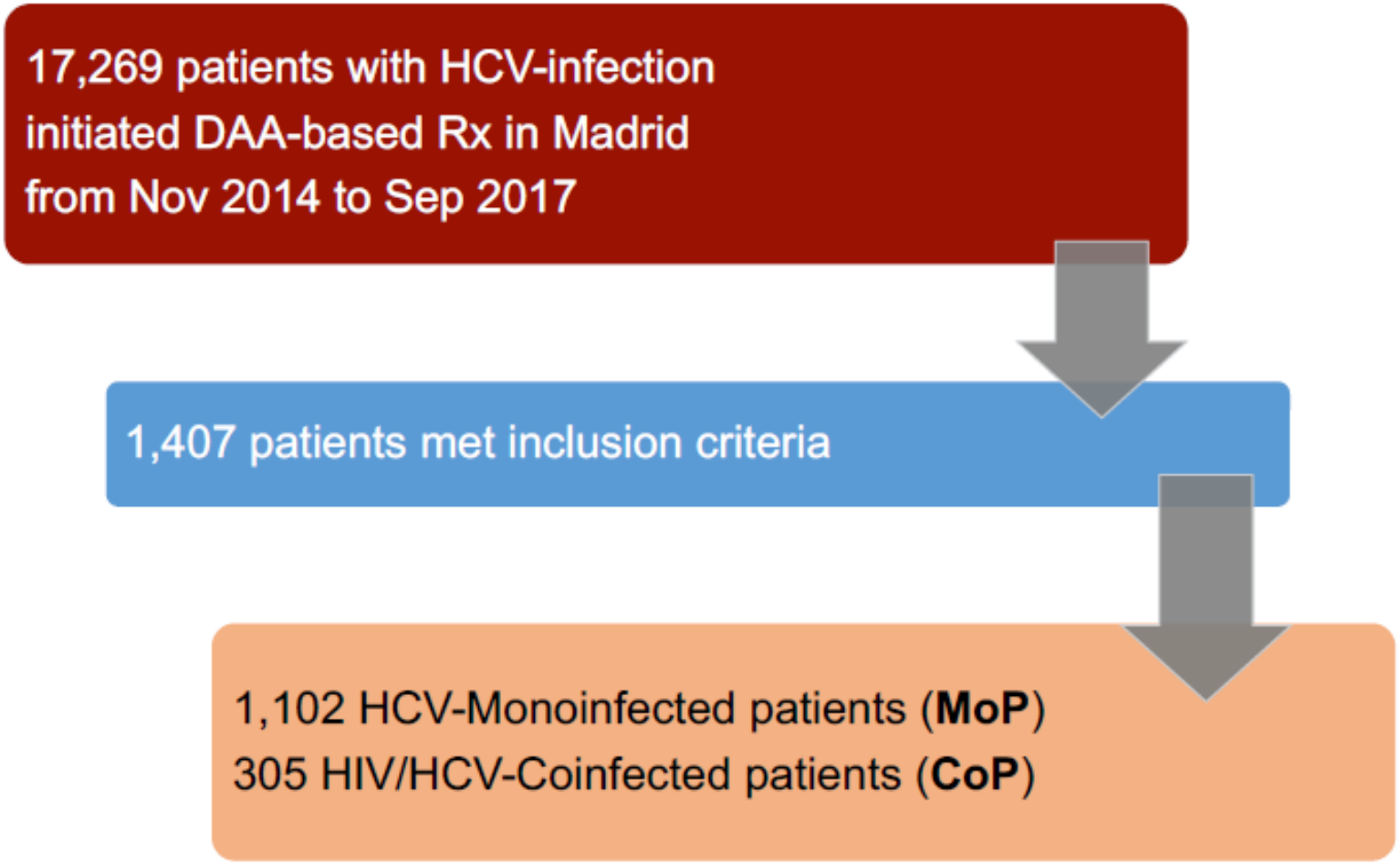
- **GECCO Cohort (9 German centres)**
- **n=1505**
- **1156 mono-, 349 coinfected**
- **Liver cirrhosis 29% (31% vs. 22%)**
- **Overall-SVR 95%, 95% monoinfected, 94% coinfected**



SVR lower in pts. with CD4 <350/µl and liver cirrhosis

Boesecke C, et alOpen Forum Infect Dis. 2017 Jul 27;4(3):ofx158.

Flow chart



Berenguer J et al CROI 2018;#607

Baseline characteristics of study population

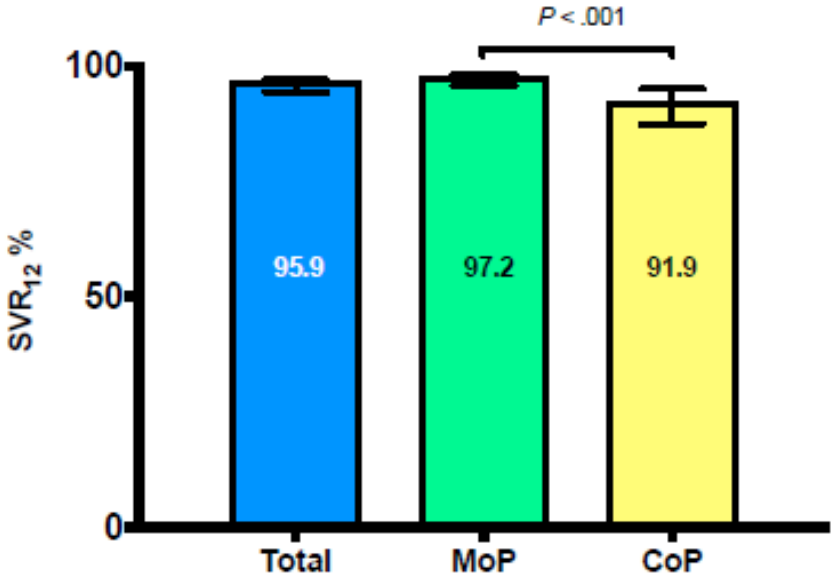
	8 Weeks				12 weeks				TOTAL
	Total	MoP	CoP	P	Total	MoP	CoP	P	MoP + CoP
VARIABLES	N=498	N=415	N=83		N=909	N=687	N=222		N=1,407
Age #	56 (49-66)	58 (49-68)	50 (46-54)	<.001	56 (50-67)	60 (52-70)	51 (47-54)	<.001	56 (50-67)
Male sex ‡	259 (52.0)	193 (46.5)	66 (79.5)	<.001	515 (56.7)	348 (50.7)	167 (75.2)	<.001	774 (55.0)
Genotype ‡				<.001				<.001	
1a	160 (32.1)	95 (22.9)	65 (78.3)		408 (44.9)	235 (34.2)	173 (77.9)		568 (40.4)
1b	323 (64.9)	312 (75.2)	11 (13.2)		468 (51.5)	432 (62.9)	36 (16.2)		791 (56.2)
1 non-subtyped	15 (3.0)	8 (1.9)	7 (8.4)		33 (3.6)	20 (2.9)	13 (5.9)		48 (3.4)
HCV RNA									
Log IU/mL #	5.9 (5.4-6.4)	5.9 (5.4-6.3)	6.1 (5.6-6.5)	.03	6.4 (6.0-6.8)	6.4 (5.9-6.8)	6.5 (6.0-6.8)	.05	6.2 (5.7 – 6.7)
> 6x10e6 IU/mL ‡	18 (3.6)	12 (2.9)	6 (7.2)	.05	224 (24.6)	161 (23.4)	63 (28.4)	.14	242 (17.2)
TE									
No ‡	8 (1.6)	8 (1.9)	0		35 (3.8)	35 (5.1)	0		43 (3.1)
Yes ‡	490 (98.4)	407 (98.1)	83 (100.0)		874 (96.1)	652 (94.9)	222 (100.0)		1,364 (96.9)
kPa #	8.6 (7.9-9.4)	8.6 (7.9-9.3)	8.6 (7.8-10.0)	.61	9.1 (8.1-10.4)	9.2 (8.1-10.5)	9.0 (8.1-10.3)	.31	8.8 (8.0 – 10.2)
≥ 9.5 kPa ‡	122 (24.9)	95 (23.3)	27 (32.5)	.08	402 (46.0)	312 (47.8)	90 (40.5)	.06	524 (38.4)

= median (IQR)
‡ = n (%)
MoP = HCV monoinfected patients
CoP = HIV/HCV coinfected patients
TE = transient elastography

Berenguer J et al CROI 2018;#607

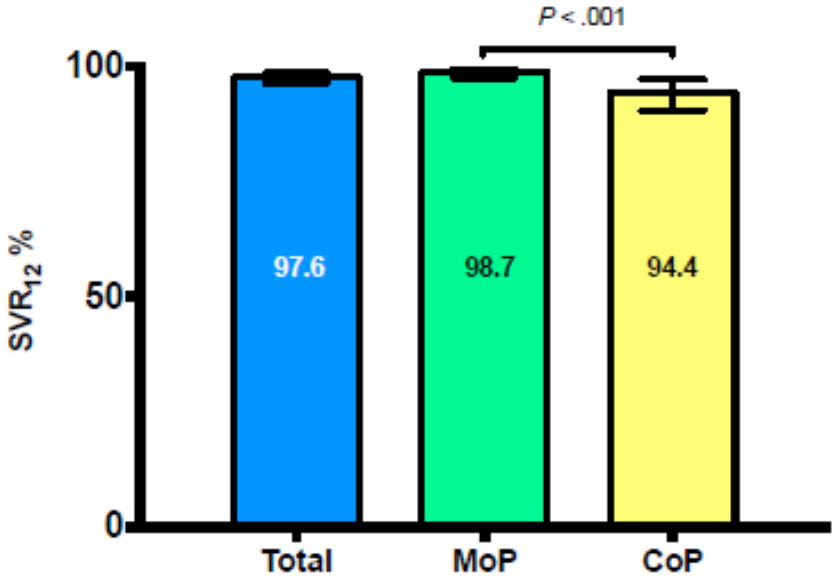
Treatment outcomes of LDV/SOF 12 weeks

ITT analysis



	Total	MoP	CoP
No.	909	687	222
SVR ITT	872 (95.9)	668 (97.2)	204 (91.9)
SVR (95% CI)	(94.4 - 97.1)	(95.7 - 98.3)	(87.5 - 95.1)
Relapse	14 (1.5)	7 (1.0)	7 (3.1)
Breakthrough	0	0	0
DC due to AE	5 (0.5)	2 (0.3)	3 (1.3)
DC other	16 (1.8)	10 (1.5)	6 (2.7)
Death	2 (0.2)	0	2 (0.9)

m-ITT analysis



	Total	MoP	CoP
No.	893	682	219
SVR ITT	872 (97.6)	668 (98.7)	204 (94.4)
SVR (95% CI)	(96.4 - 98.5)	(97.5 - 99.4)	(90.5 - 97.1)
Relapse	14 (1.6)	7 (1.0)	7 (3.2)
Breakthrough	0	0	0
DC due to AE	5 (0.6)	2 (0.3)	3 (1.4)
Death	2 (0.2)	0	2 (0.9)

MoP = HCV monoinfected patients
CoP = HIV/HCV coinfected patients

Berenguer J et al CROI 2018;#607

Rates of SVR12 according to the presence of cirrhosis, decompensated cirrhosis , history of previous interferon treatment and HCV genotype in 5464 HCV infected patients treated in Lombardy with EASL recommended treatment schedules stratified according to HIV co-infection

Study Group	ALL	Cirrhotics	Decompensated	PEGIFN Exp.	Genotype 3
HIV+	4444/4564 (97,4%)	2512/2588 (97,1%)	71/75 (94,7%)	1434/1472 (97,4%)	413/435 (94,9%)
HIV-	872/900 (96,9%)	557/576 (96,7%)	46/50 (92%)	150/157 (95,5%)	213/225 (94,7%)

Multivariate logistic regression identified two predictors of lack of SVR12 HCV G3 infection (OR 2.25 95% CI 1.5-3.66 p<0.00001) and decompensation at baseline (OR 2.48 95% CI 1,16-5,3 p=0,0187). HIV coinfection was not associated with an increased risk of lack of SVR12 (OR 0,95 95% CI 0,61-1,47)

HIV related Characteristics:
median CD4 597 (IQR385-841) cells/mmc
CD4 < 200 7% HIV RNA supppressed 96.7% 3% not on cART 23% previous Dx of AIDS

Spinetti A. et al on Behalf of RETE LOMBARDIA HCV – NAVIGATORE . AASLD 2018

HCV/HIV COINFECTION WHAT IS LEARNED FROM PITER AND COHORT STUDIES

- **TWO DIFFERENT POPULATIONS: DATA FROM PITER COHORT**
- **SMILAR TREATMENT RESPONSE?**
- **ACCESS TO TREATMENT: ISSUES IN HIV COINFECTED PATIENTS**

Trends in HCV treatment uptake, efficacy and impact on liver fibrosis in the Swiss HIV Cohort Study.

- We compared treatment incidence, sustained virological response (SVR)12 and liver fibrosis stages between three time periods: period 1, 01/2009-08/2011 (prior to the availability of DAAs); period 2, 09/2011-03/2014 (first generation DAAs); period 3, 04/2014- 12/2015 (second generation DAAs).
- At the beginning of the third period, 876 SHCS participants had a chronic HCV infection of whom 180 (20%) started treatment with a second-generation DAA. Three-quarters of them had advanced liver fibrosis (Metavir ≥ F3) of whom 80% were cirrhotics.
- SVR12 was achieved in 173/180 (96%) patients, three patients died and four experienced a virological failure.
- Over the three time periods, treatment uptake (4.5/100 py, 5.7/100 py, 22.4/100 py) and efficacy (54%, 70%, 96% SVR12) continuously increased.
- The proportion of cirrhotic patients with replicating HCV infection in the SHCS declined from 25% at the beginning to 12% at the end of the last period.

Beguelin C et al Liver Int 2018: 38:424-31

Saeed S et al. *Journal of the International AIDS Society* 2017, **20**:e25013
http://onlinelibrary.wiley.com/doi/10.1002/jia2.25013/full | https://doi.org/10.1002/jia2.25013

JIAS JOURNAL OF THE INTERNATIONAL AIDS SOCIETY

RESEARCH ARTICLE

Disparities in direct acting antivirals uptake in HIV-hepatitis C co-infected populations in Canada

Sahar Saeed[1,2], Erin C Strumpf[1,3], Erica EM Moodie[1], Jim Young[2], Roy Nitulescu[2], Joseph Cox[1,2], Alexander Wong[4], Sharon Walmsely[5,6], Curtis Cooper[7], Marie-Lousie Vachon[8], Valerie Martel-Laferriere[9], Mark Hull[10], Brian Conway[11] Marina B Klein[2,6] and for the Canadian Co-Infection Cohort Study

Corresponding author: Marina Klein, Division of Infectious Diseases and Chronic Viral Illness Service, Department of Medicine, Glen site, McGill University Healt Centre, Montreal, QC, Canada. Tel: +(514) 843-2090/514-934-1934, ext. 32306. (marina.klein@mcgill.ca)

Table 2. Predictors of second-generation direct acting antiviral treatment initiation

	Unadjusted model HR (95% CI)	Adjusted model aHR (95% CI)
Age (per 10-year)	1.60 (1.37, 1.87)	1.12 (0.93, 1.35)
Indigenous people	0.23 (0.14, 0.37)	0.70 (0.43, 1.15)
Sex (reference heterosexual men)		
Women	0.71 (0.48, 1.04)	0.85 (0.53, 1.36)
MSM	2.38 (1.74, 3.24)	1.95 (1.33, 2.86)
Injection Drug Use (reference non-PWID)		
Active PWID[a]	0.26 (0.18, 0.40)	0.60 (0.38, 0.94)
Past PWID[b]	0.54 (0.39, 0.75)	0.88 (0.58, 1.33)
Income (<$18 000/year)	0.45 (0.34, 0.61)	0.50 (0.35, 0.71)
Alcohol use	0.96 (0.73, 1.27)	0.74 (0.58, 0.94)
Undetectable HIV viral load	2.55 (1.70, 3.83)	1.73 (1.20, 2.50)
Significant Liver Fibrosis (APRI > 1.5)	2.60 (1.94, 3.48)	2.28 (1.64, 3.16)
HCV genotype (reference genotype 1)		
2	1.21 (0.66, 2.24)	1.12 (0.57, 2.18)
3	0.59 (0.38, 0.92)	0.69 (0.42, 1.13)
4	2.48 (1.15, 5.22)	1.51 (0.66, 3.16)
Province of residence[c] (reference British Columbia)		
Saskatchewan	0.02 (0.00, 0.17)	0.04 (0.01, 0.11)
Alberta/Ontario	1.00 (0.69, 1.44)	0.58 (0.24, 1.41)
Quebec	1.60 (1.15, 2.23)	1.52 (0.66, 3.51)

Adjusted model included all predictors listed in Table 2. Undetectable HIV RNA (RNA < 50 copies/mL).

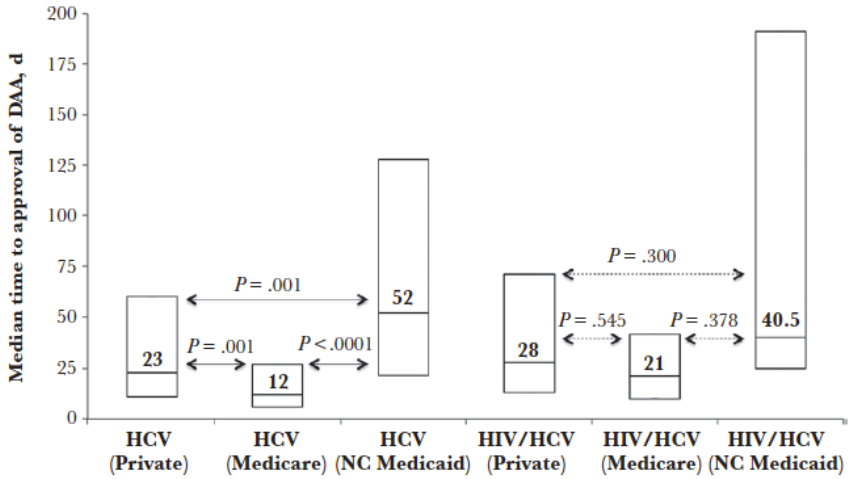
Open Forum Infectious Diseases

MAJOR ARTICLE

Direct-Acting Antivirals Improve Access to Care and Cure for Patients With HIV and Chronic HCV Infection

Lauren F. Collins,[1] Austin Chan,[2] Jiayin Zheng,[3] Shein-Chung Chow,[3,4] Julius M. Wilder,[4,5] Andrew J. Muir,[4,5] and Susanna Naggie[2,4]

[1]Department of Medicine, Emory University School of Medicine, Atlanta, Georgia; [2]Division of Infectious Diseases, [3]Department of Biostatistics and Bioinformatics, [4]Duke Clinical Research Institute, and [5]Division of Gastroenterology, Duke University, Durham, North Carolina



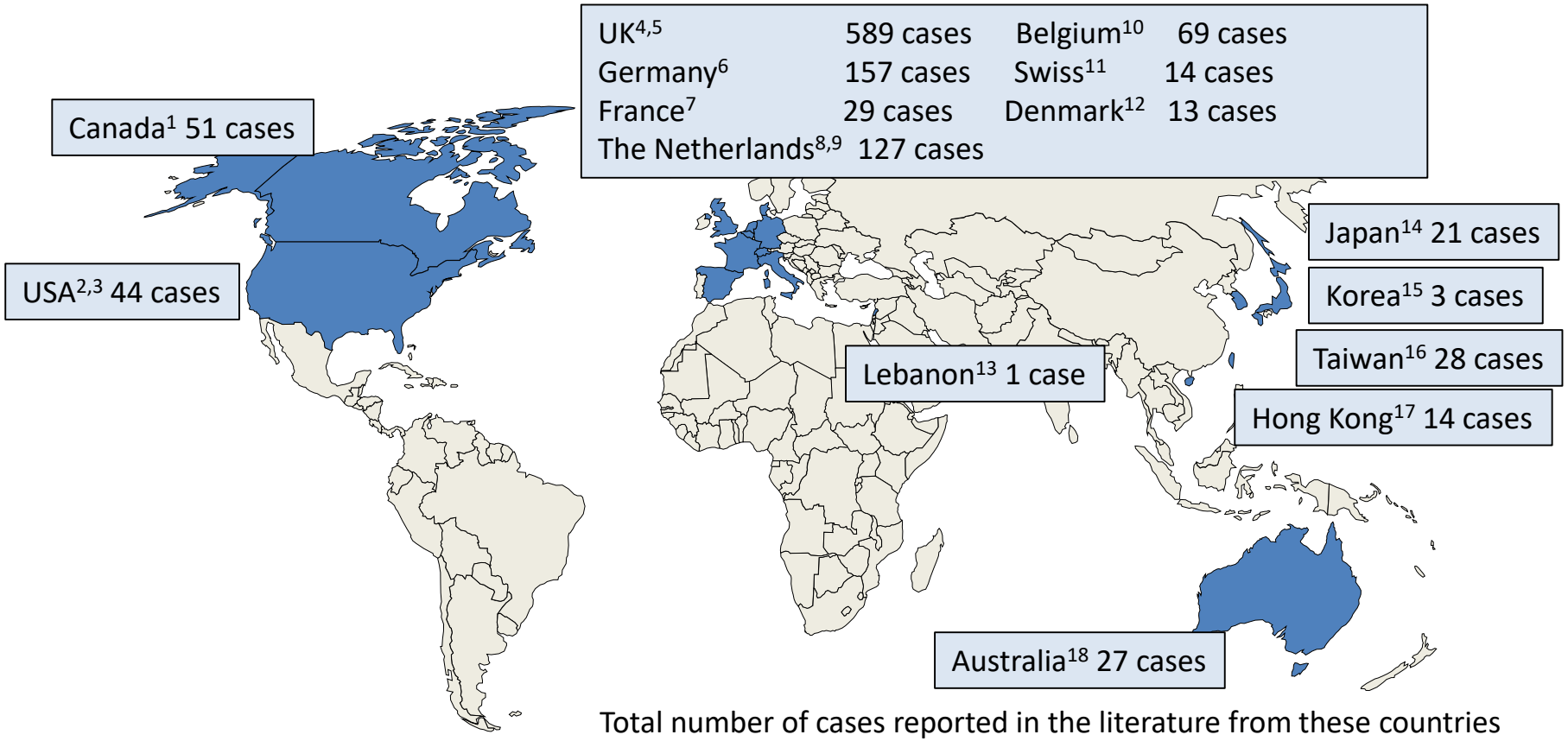
Time to approval of direct-acting antiviral therapy for patients with hepatitis C virus (HCV) and HIV/HCV stratified by insurance status.

Table 3. Stepwise Multivariable Logistic Regression Model Assessing Predictors of HCV Treatment With Direct-Acting Antiviral Therapy in Patients With HIV/HCV

	Likelihood HIV/HCV Patient Treated With DAA			
	Univariate Analysis		Multivariate Analysis	
	OR	95% CI	OR	95% CI
Age <55 y	0.56	0.35–0.89	—	—
Male	1.75	1.02–3.00	—	—
Caucasian race	2.87	1.71–4.82	2.68	1.54–4.68
CD4 count ≥200 cells/mm^3	4.74	2.00–11.21	3.65	1.41–9.43
HIV viral load <200 copies/mL	11.76	3.64–37.98	6.64	1.99–22.16
PI-based ART	1.03	0.62–1.72	—	—
Cirrhosis	3.08	1.84–5.16	3.12	1.77–5.51
HBV infection	1.89	0.64–5.56	—	—

Abbreviations: ART, antiretroviral therapy; CD4, cluster of differentiation 4; CI, confidence interval; HBV, hepatitis B virus; HCV, hepatitis C virus; HIV, human immunodeficiency virus; OR, odds ratio; PI, protease inhibitor.

Acute outbreaks of HCV have been reported in HIV+ MSM across the world

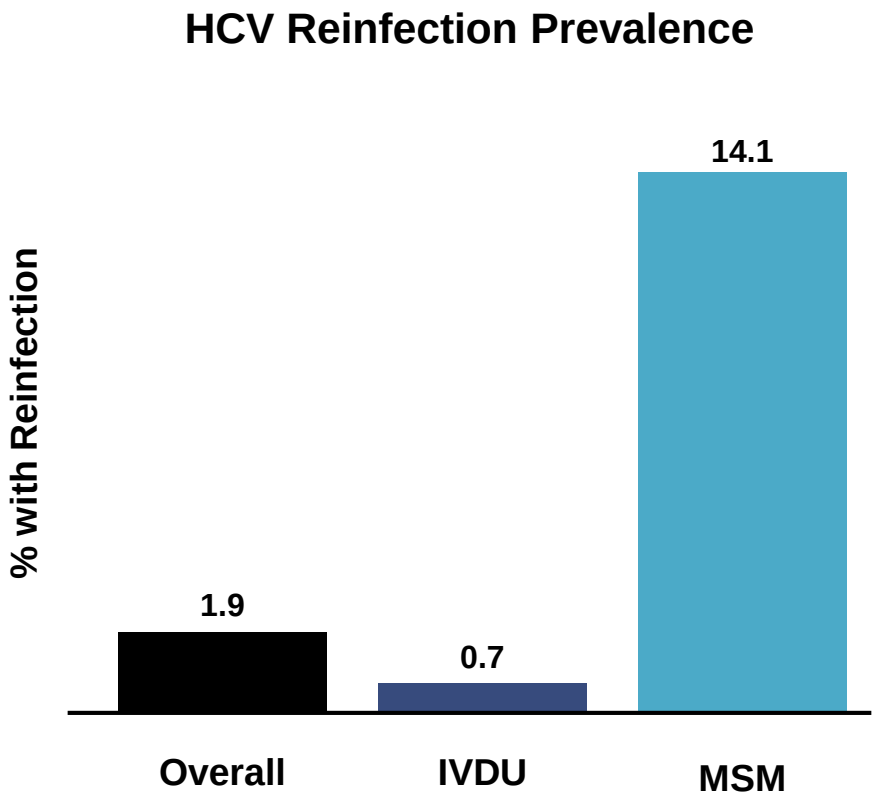


Total number of cases reported in the literature from these countries

1. Burchell AN, et al. Can J Infect Dis Med Microbiol 2015;26:17–22; 2. Luetkemeyer A, et al. J Acquir Immune Defic Syndr 2006;41:31–6; 3. Cox A, et al. Gastroenterology 2009;136:26–31; 4. Giraudon I, et al. Sex Transm Infect 2008;84:111–5; 5. Ruf M, et al. Euro Surveill 2008;13:1–3; 6. Vogel M, et al. Clin Infect Dis 2009;49:317–8; 7. Gambotti L, et al. Euro Surveill 2005;10:115–7; 8. Urbanus A, et al. AIDS 2009;23:F1–F7; 9. Arends JE, et al. Neth J Med 2011;69:43–9; 10. Bottieau E, et al. Euro Surveill 2010;15:1–8; 11. Rauch A, et al. Clin Infect Dis 2005;41:395–402; 12. Barfod TS et al. Scand J Infect Dis. 2011;43:145–8; 13. Dionne-Odom J, et al. Lancet Infect Dis 2009;9:775–83; 14. Nishijima T, et al. J Acquir Immune Defic Sundr 2014;65:213–7; 15. Lee S, et al. Korean J Intern Med 2016; doi: 10.3904/kjim.2015.353; 16. Sun YH, et al. J Clin Microbiol 2012;50:781–7; 17. Lin AWC, et al. J Int AIDS Soc 2014;17:19663; 18. Matthews GV, et al. Clin Infect Dis 2009;48:650–8

MSM Have Highest HCV Reinfection Risk

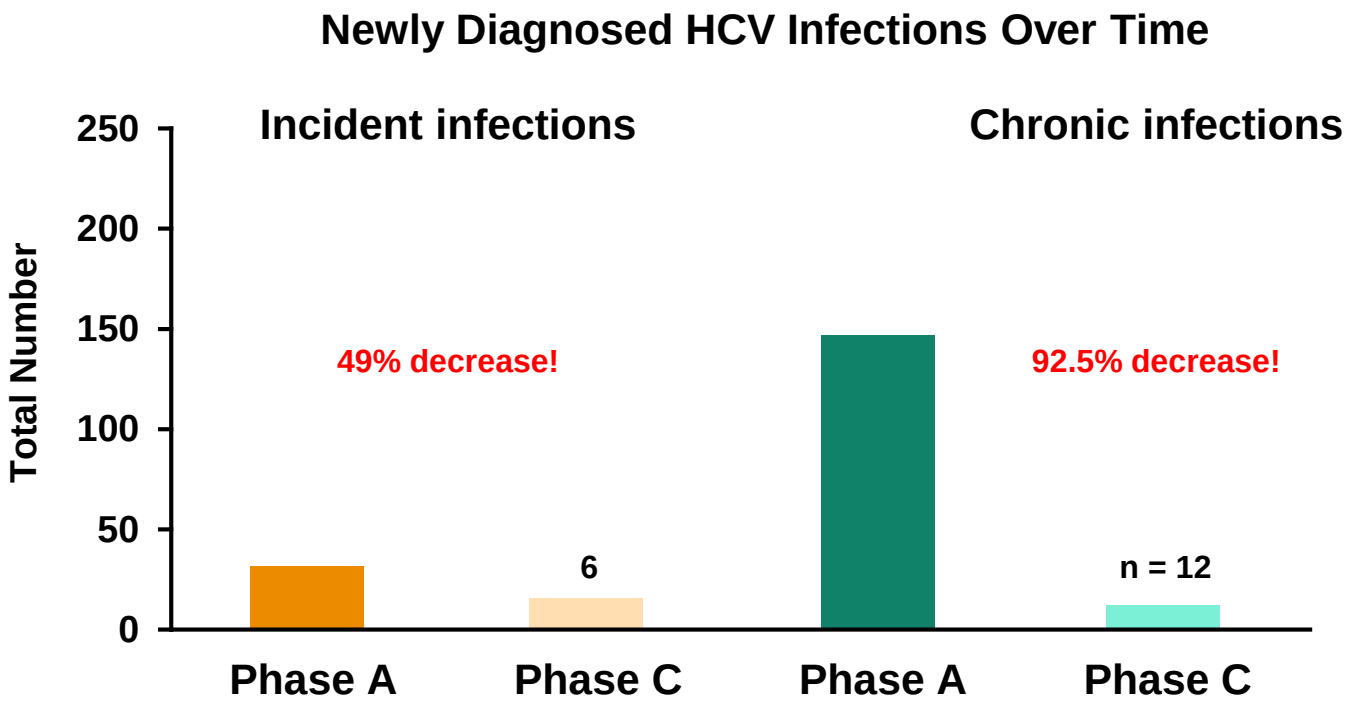
- German multi-center cohort (GECCO Cohort)
- 2074 HCV patients
- 66% GT1, 24% GT3
- 37% IVDU, 12% MSM
- 23% HIV coinfected
- Median 63 weeks until HCV reinfection (n=41, 36 in MSM)



Ingiliz P, et al. 25th CROI; Boston, MA; March 4-7, 2018. Abst. 612.

TasP in HCV/HIV+ MSM: HCVREE Study

- 6-monthly HCV PCR Tests in the Swiss HIV Cohort (n=3722)
- 177 (4,8%) newly diagnosed HCV (Phase A) -> DAA Therapy
- After Re-Screening only 28 (0,8%) showed a renewed positive HCV PCR (Phase C)

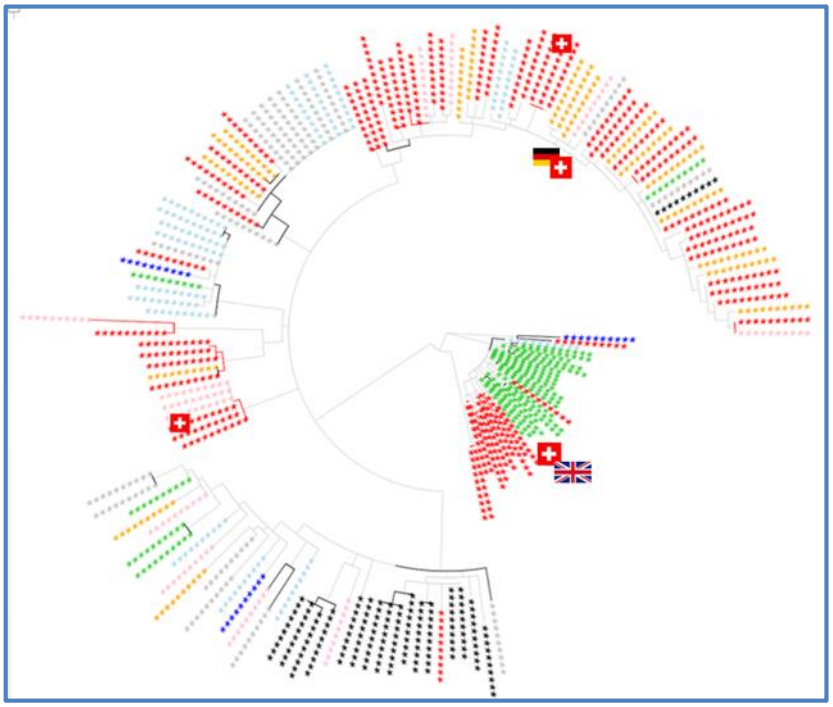


Braun L, et al. 25th CROI; Boston, MA; March 4-7, 2018. Abst. 81LB.

Virus without Boarders: HCV in MSM

- Phylogenetic analysis
- 29 HIV patients with HCV GT1a
- 90% of viral sequences found in 5 different European transmission clusters
- 1/3 “imported” infections (25% from Germany, 40% from UK)

Phylogenetic Tree

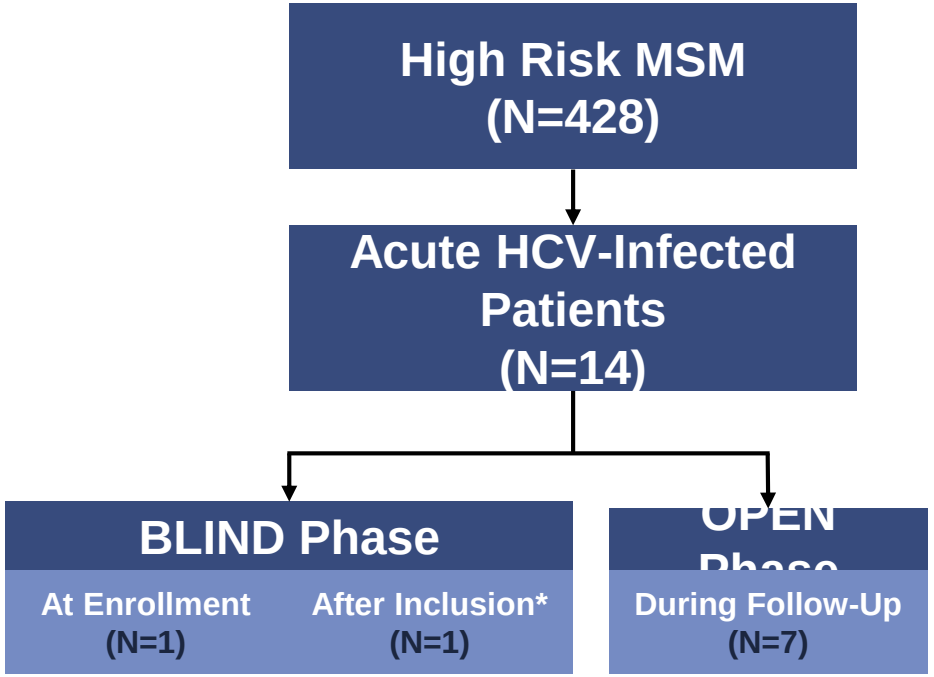


- Incident Swiss HCV Infections in HIV+ MSM
- Chronic from Switzerland
- UK
- Germany
- The Netherlands
- Other Countries in Europe
- Outside Europe
- Unknown

Salazar-Vizcaya L, et al. 25th CROI; Boston, MA; March 4-7, 2018. Abst. 130.

HCV: The Next STD in MSM on PrEP?

- ANRS IPERGAY PrEP Study
- HCV antibody test:
  - Baseline
  - 6-monthly
- 25 sex partners in the last 2 months
- 15x sex in the last 4 weeks
- 92% unprotected receptive anal intercourse
- 54% chemsex



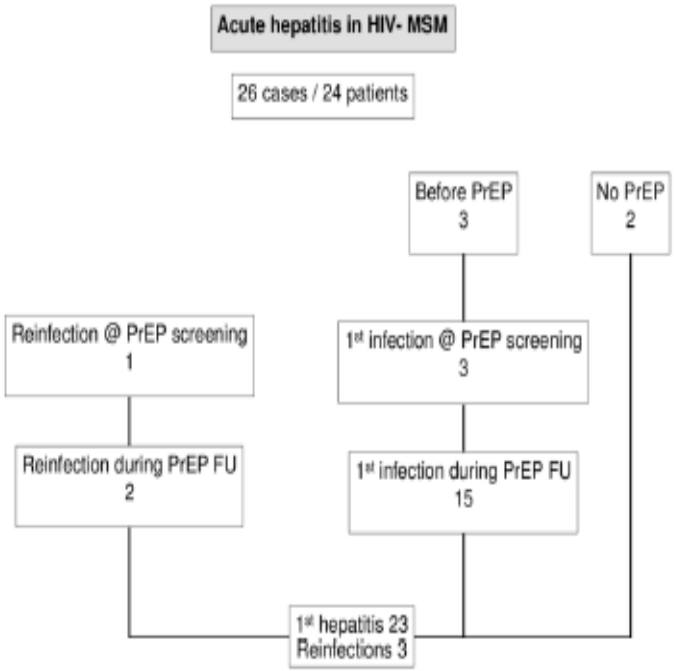
Gras J, et al. 25th CROI; Boston, MA; March 4-7, 2018. Abst. 585.

Gras J, et al. 25th CROI; Boston, MA; March 4-7, 2018. Abst. 585.

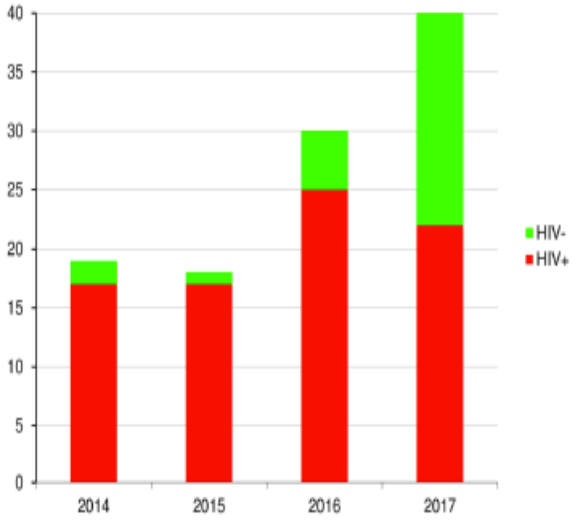
Strong increase of acute HCV infections in HIV-negative men having sex with men Lyon, 2014-2017

Laurent Cotte, Marie Astrie, Anne-Claire Uhres, François Bailly, Sylvie Radenne, Christophe Ramière, Corinne Brochier, Patrick Mailhes, Mary-Anne Trabaud, Jean-Claude Tardy, Mathieu Godinot, Pierre Pradat for the Lyon Acute Hepatitis Study Group

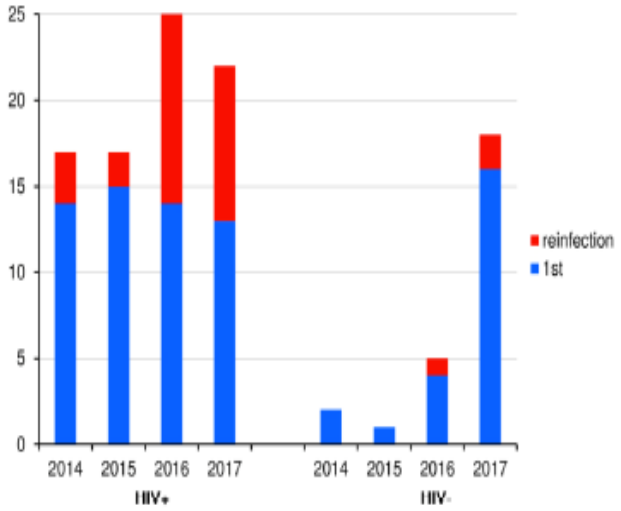
EASL The Home of Hepatology
THE INTERNATIONAL LIVER CONGRESS™ 2018



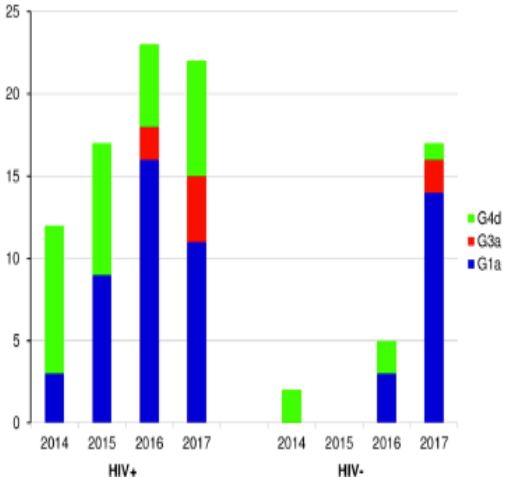
Acute HCV infections by year



1st infection / reinfection by HIV status



Evolution of genotypes by HIV status



Update sulla gestione della coinfezione HIV/HCV

- Different patients population: rapidly progressive disease in HIV with different virologic (genotype distribution) and personal characteristics (age and gender)
- HiV coinfection does not influence anti HCV treatment response when adjusting for patients characteristics
- Uptake of HIV coinfected patients -> reduction of HCV circulation in this population but viruses have no borders
- PREP → HCV acute infection in HIV- MSM