

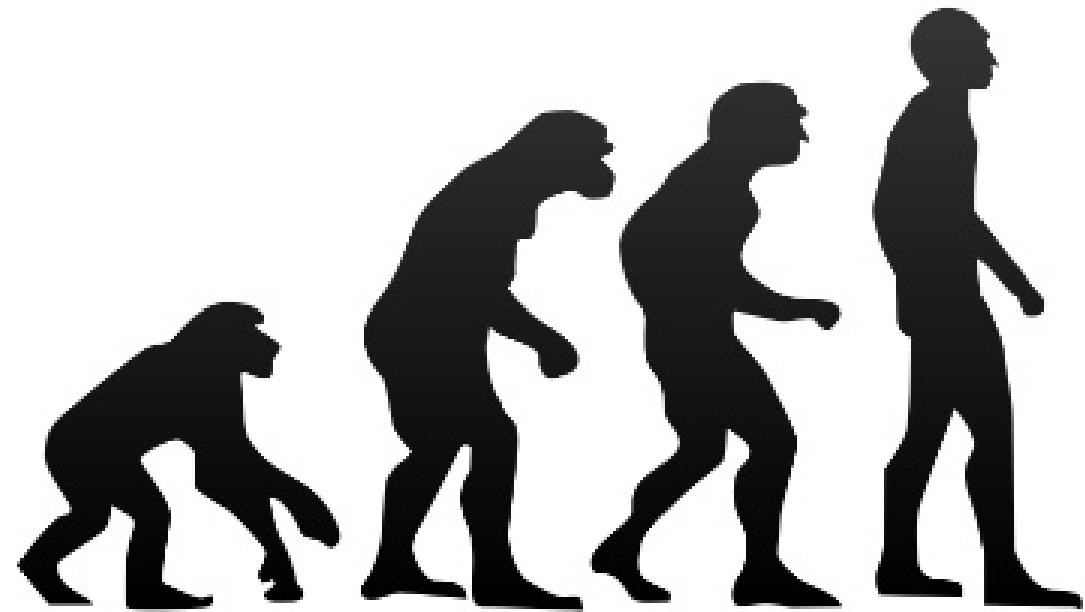




DEATH

A

O D E R



Evolution **NOT** revolution

**POSI+IVELY
AGING**



UNDIAGNOSED HIV CAN BE A DEATH SENTENCE



...DIAGNOSED HIV DOESN'T HAVE TO BE

People diagnosed early with HIV can expect to have a near-normal life expectancy



Visit us for HIV services with remote anywhere during our operating hours:

Monday - Friday 8am - 5pm
Saturday 9am - 1pm
Wednesday 10am - 1pm
Thursday 10am - 1pm

801 Queen Street
Montgomery Building
Montgomery Avenue
19100 BLAND

Charlottesville and Washington Hospital
Healthcare Network



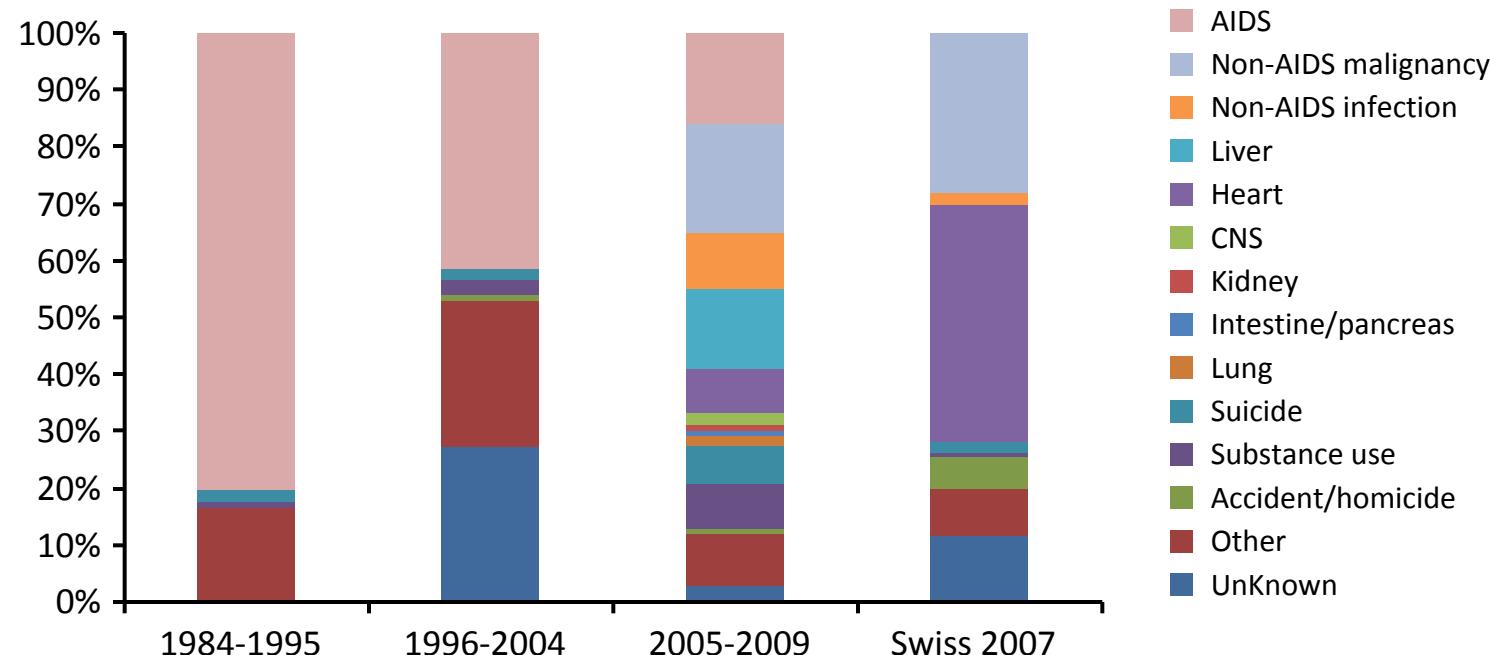
Or visit www.cwhc.org for more info or to see what is available. Readings, VA.
Our winning advertisement was developed by Ryan Moyer for the Center for Health Care Services Community Campaign.



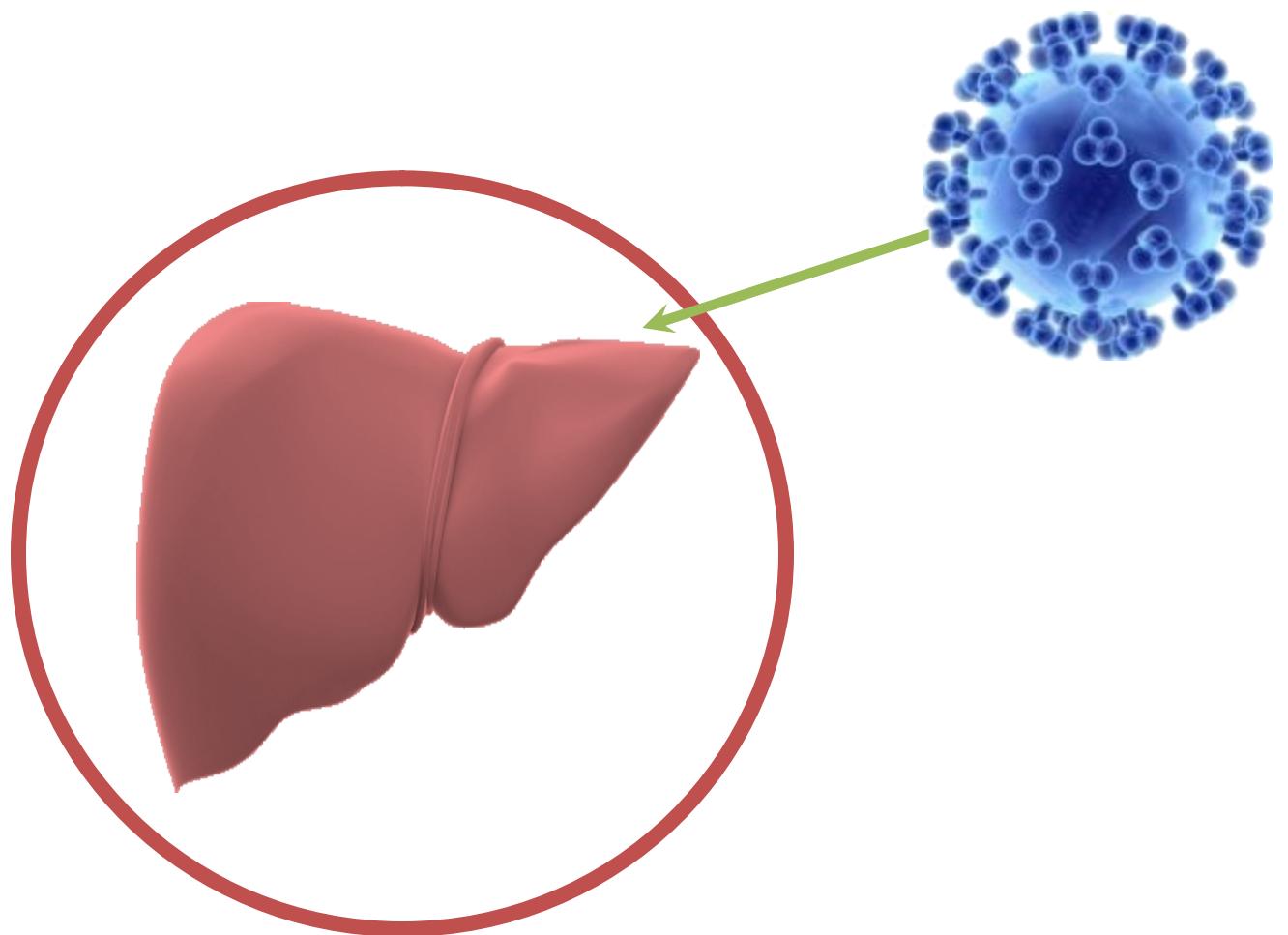
Changing Patterns of the Causes of Death in a Swiss Cohort (SHCS)

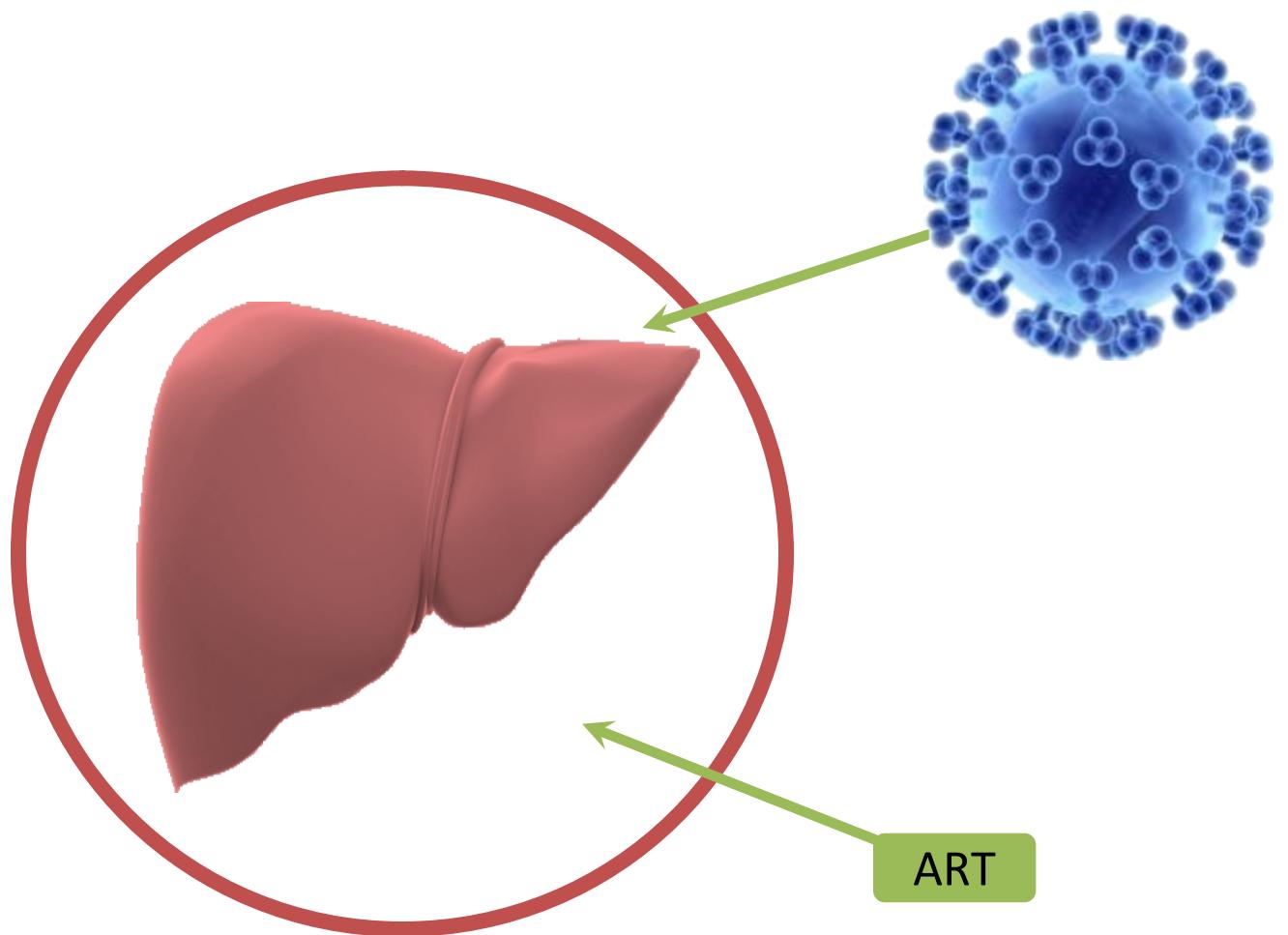
- SHCS is a prospective observational cohort
- Characteristics of participants that died from 2005-2009
- 459 deaths/9,053 participants (5.1%)

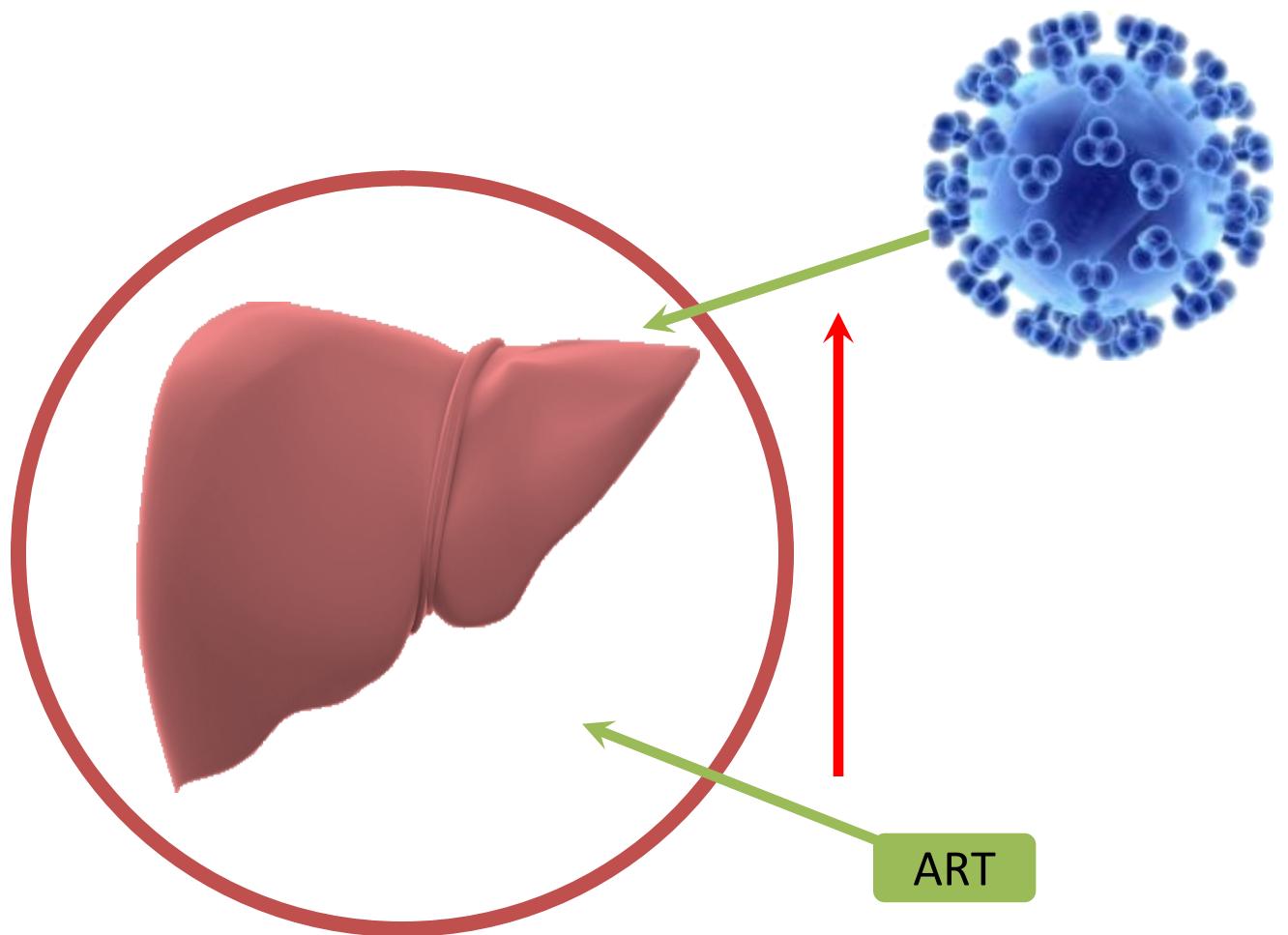
Causes of Death in Participants in the Swiss HIV Cohort Study
in 3 different Time Periods, and in the Swiss Population in 2007



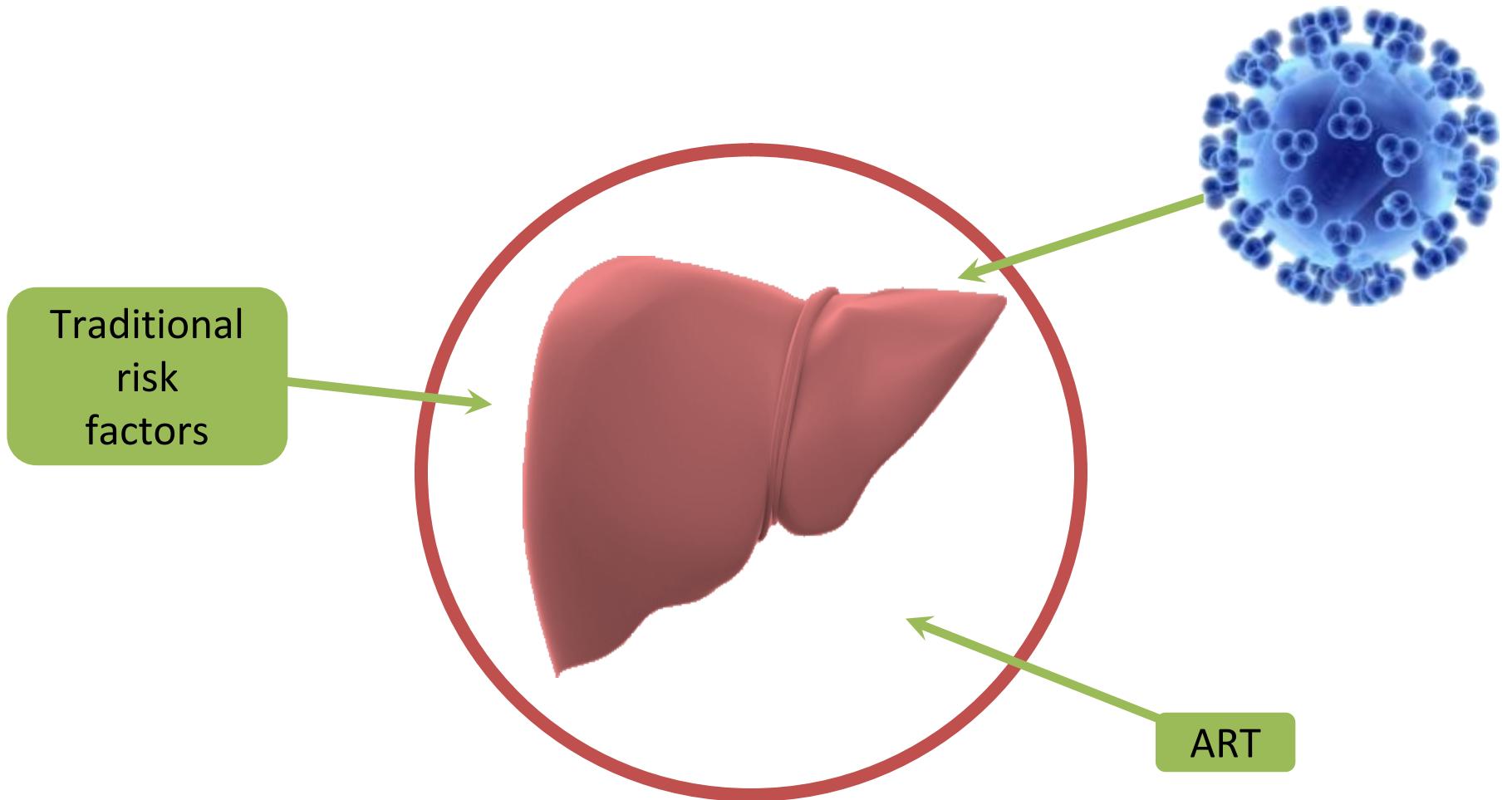


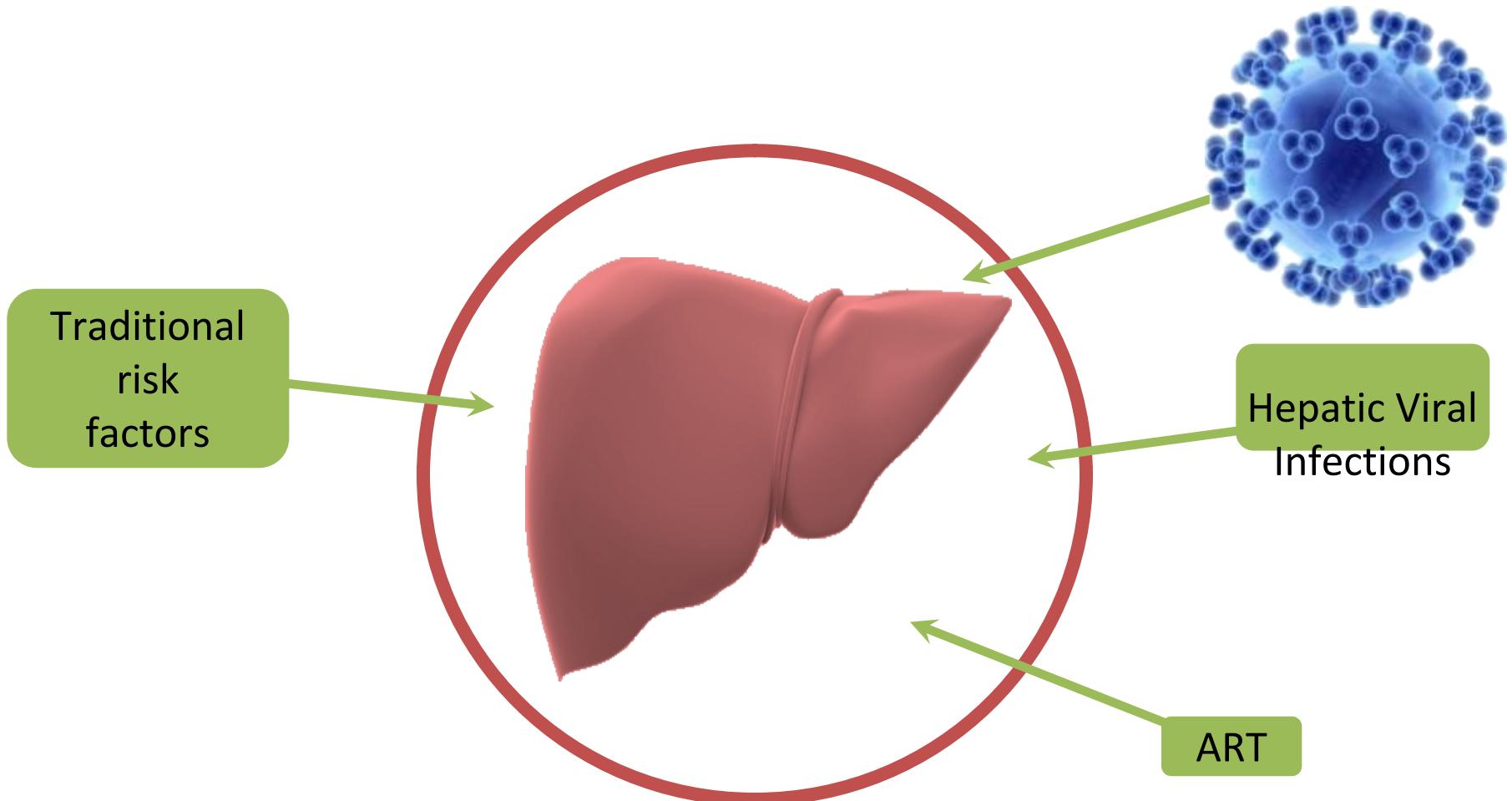


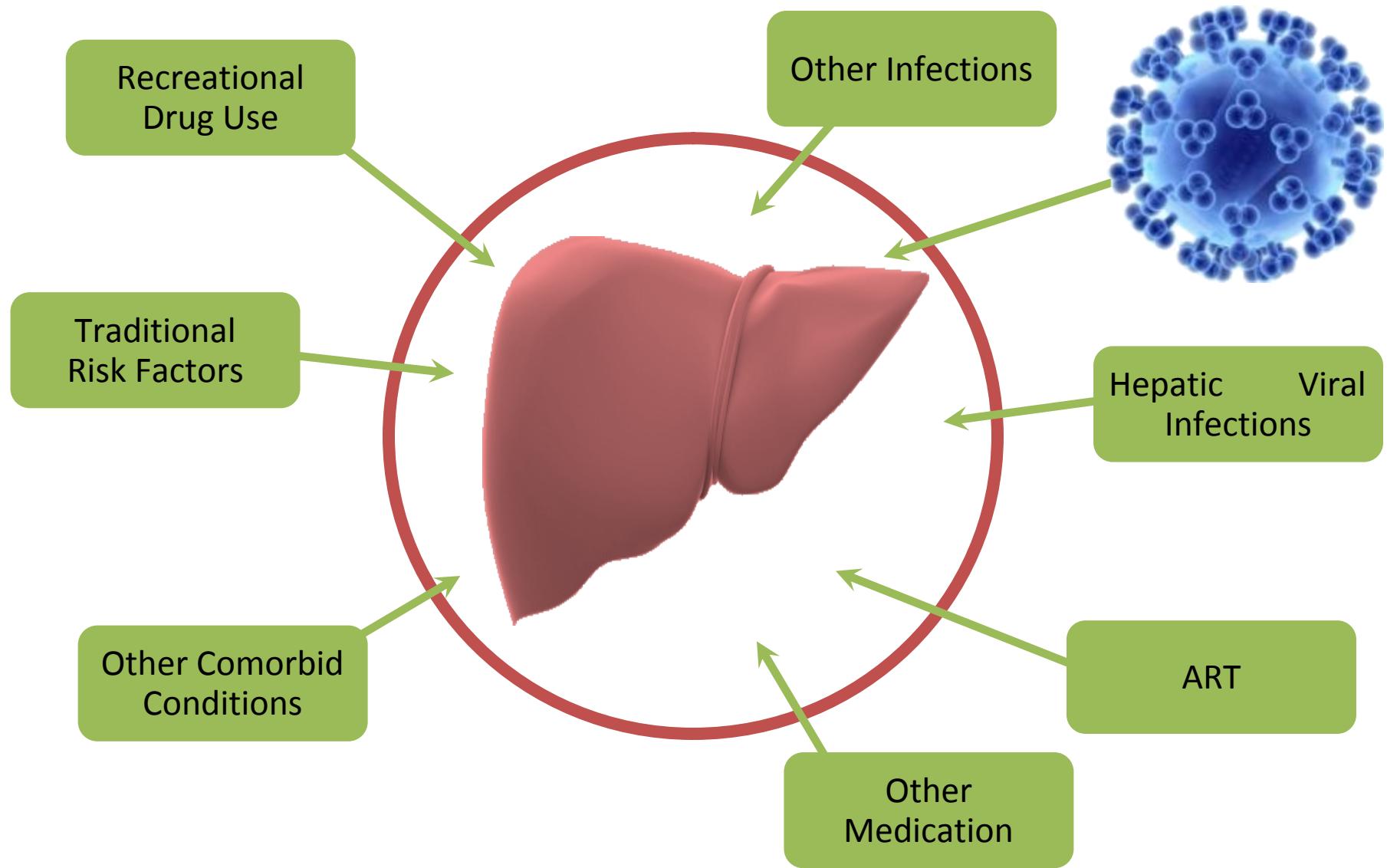




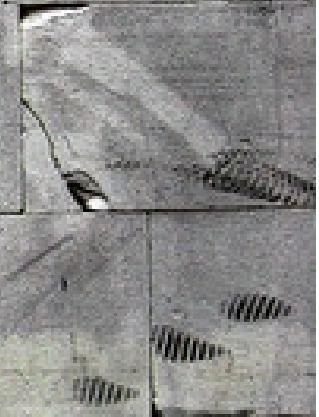
ART







REVOLUTION



Not evolution

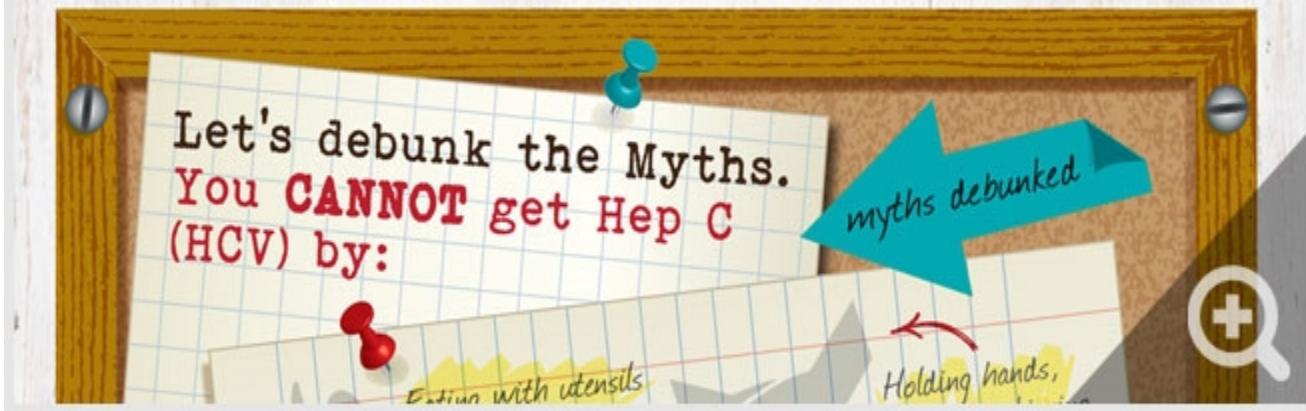


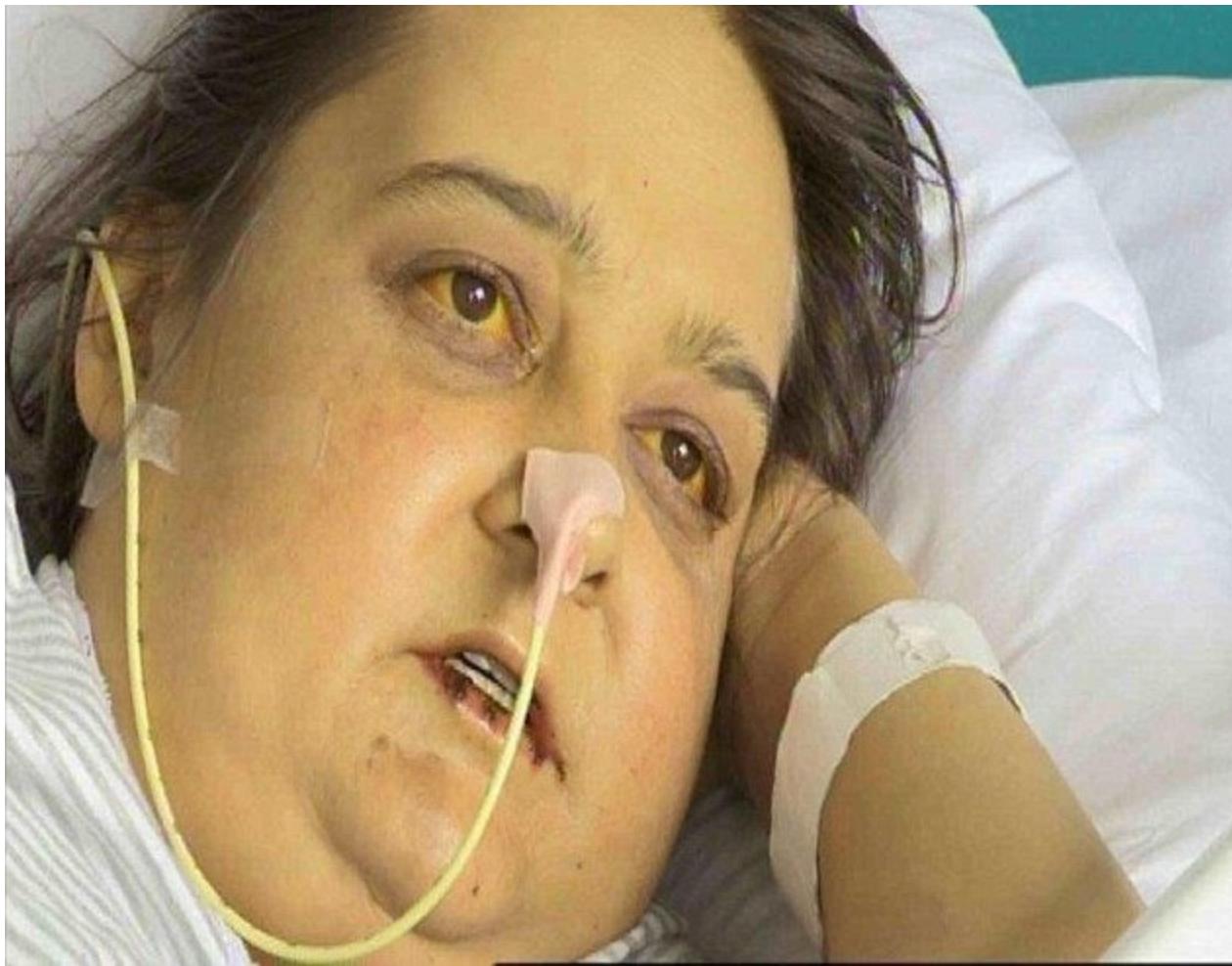






HEPATITIS C biggest Myths: Debunked







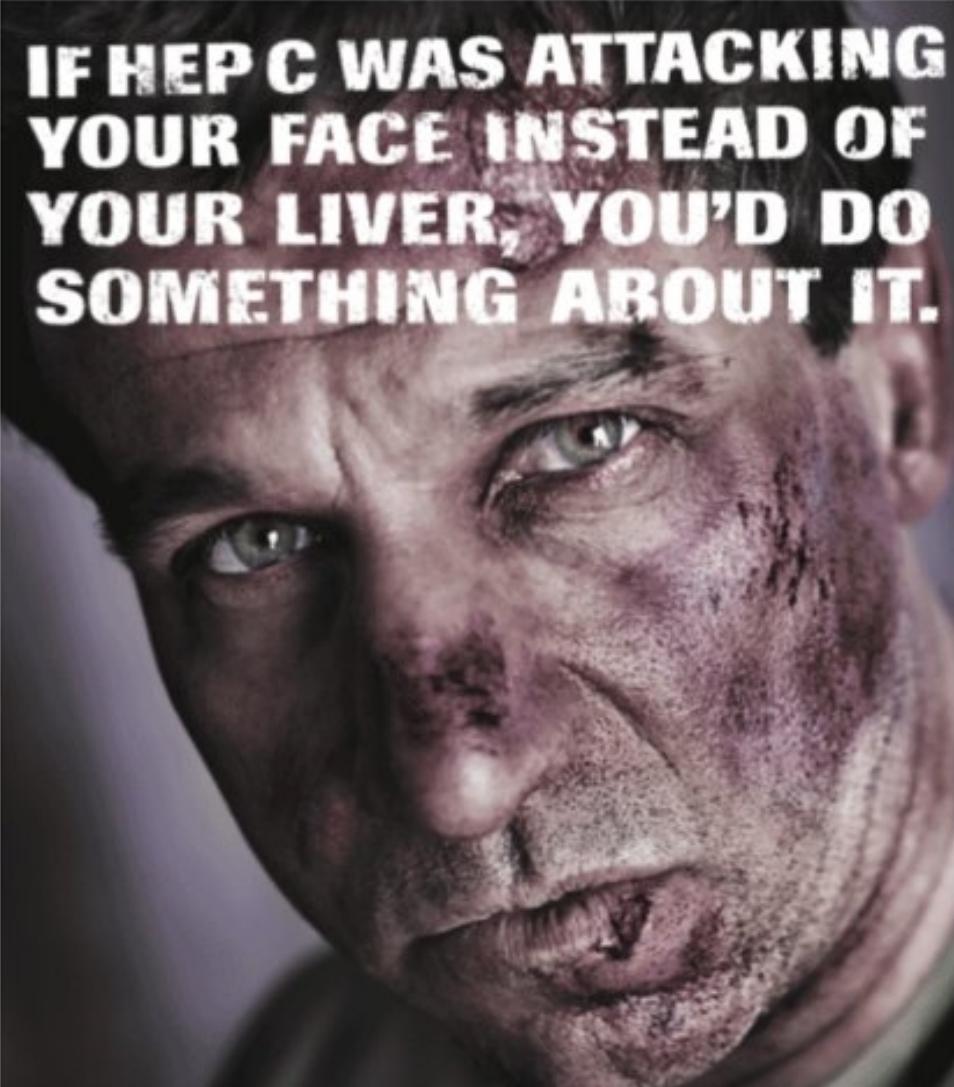
Morituri Te Salutant



**RULES FOR GLADIATORIAL COMBAT AND
CAMPAIGNS**

Version 3.0

**IF HEP C WAS ATTACKING
YOUR FACE INSTEAD OF
YOUR LIVER, YOU'D DO
SOMETHING ABOUT IT.**



READY TO FIGHT BACK?

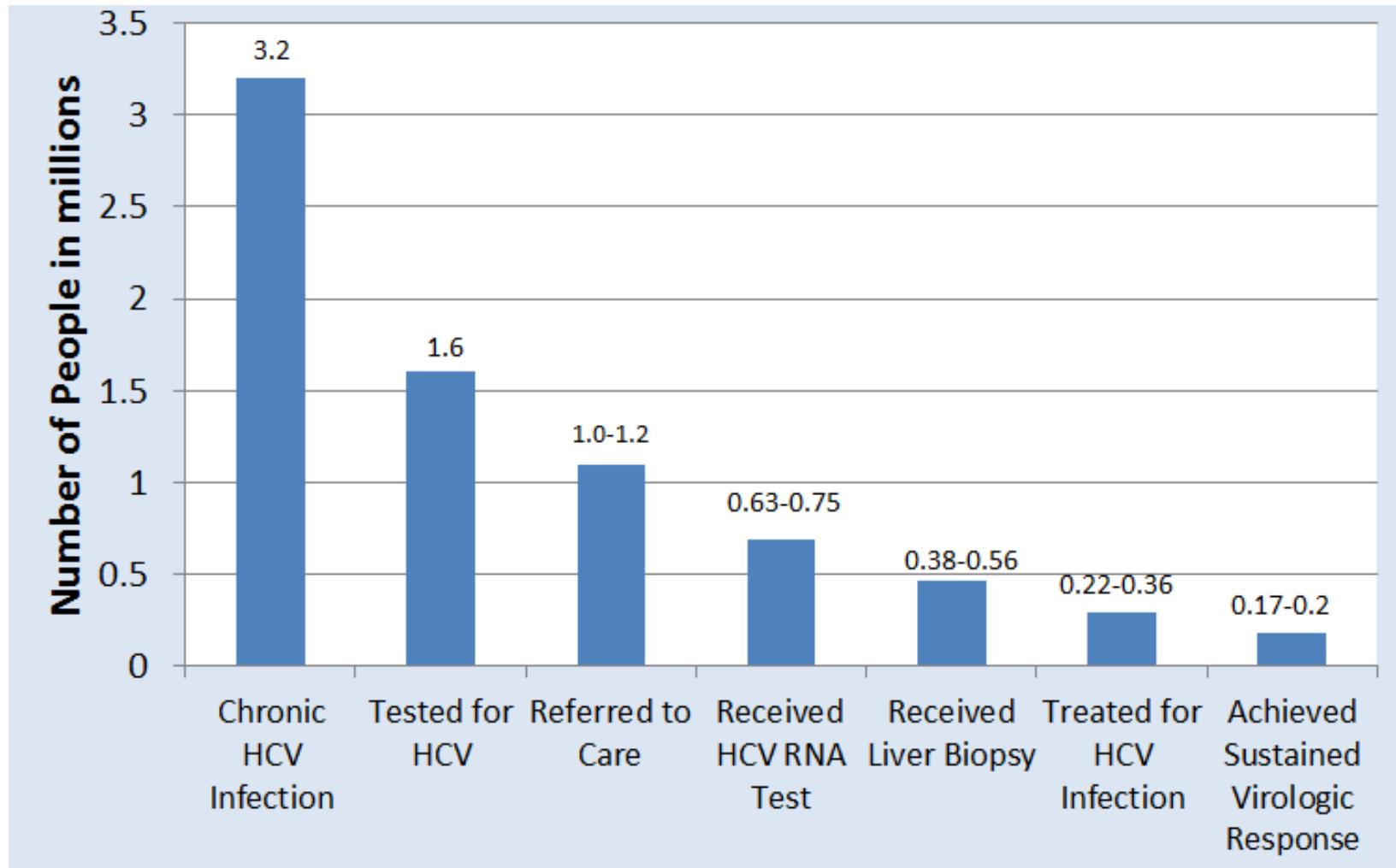
YOU'LL NEVER BE STRONGER THAN YOU ARE TODAY TO STOP THE DAMAGE HEP C IS DOING TO YOUR LIVER.
Talk to your doctor now about prescription treatment. Patients in clinical studies overall had a better than 50% chance
of reducing the Hep C virus to undetectable levels. Response to treatment may vary based on individual factors.
So log on or call, then talk to your doctor to find out if treatment is right for you. And help put Hep C behind you.

HepCSource.com

866-HepCSource

866-437-2768

Hepatitis C Virus: Prevalence and Management (USA)



HEPATITIS C

One drop of blood can change your life.



HEP C

Healthcare Professionals

Individual Patients

Contact



3 OUT OF 4 PEOPLE
WITH CHRONIC HEPATITIS C
DON'T KNOW THEY'RE INFECTED

Hepatitis C. Are you at risk?

ASSESS YOUR RISK



“ When I was young,
I hit the streets
and they hit me back
a lot harder ”

HEPATITIS C CAN LEAD TO LIVER CANCER

Hard-hitting as it may seem, you could be living with Hepatitis C for 20 or 30 years and never have symptoms. Talk to your doctor about getting tested. It could save your life.



Publication No. 221688



U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention

www.cdc.gov/knowmorehepatitis

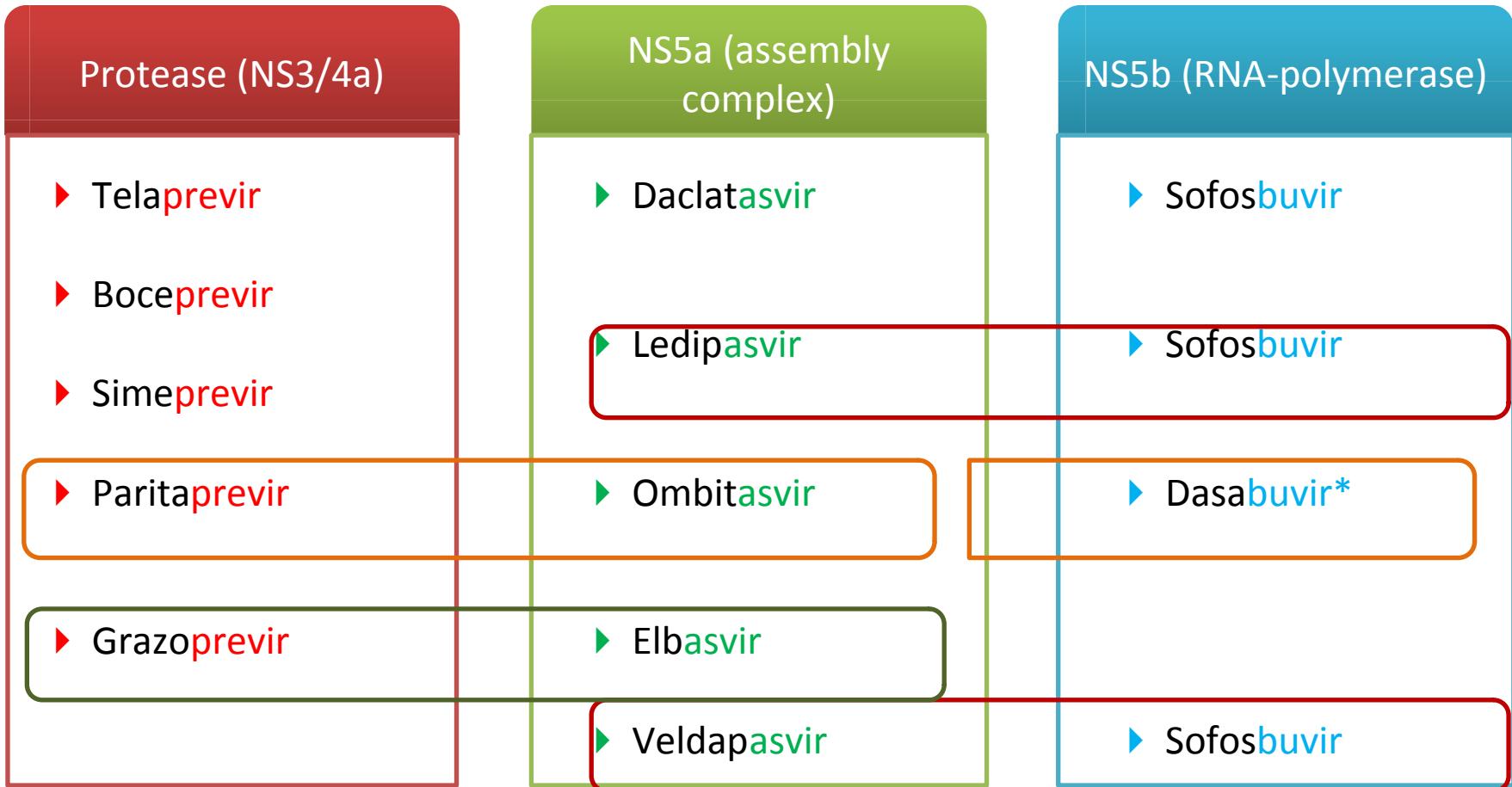


THE WINDS OF CHANGE

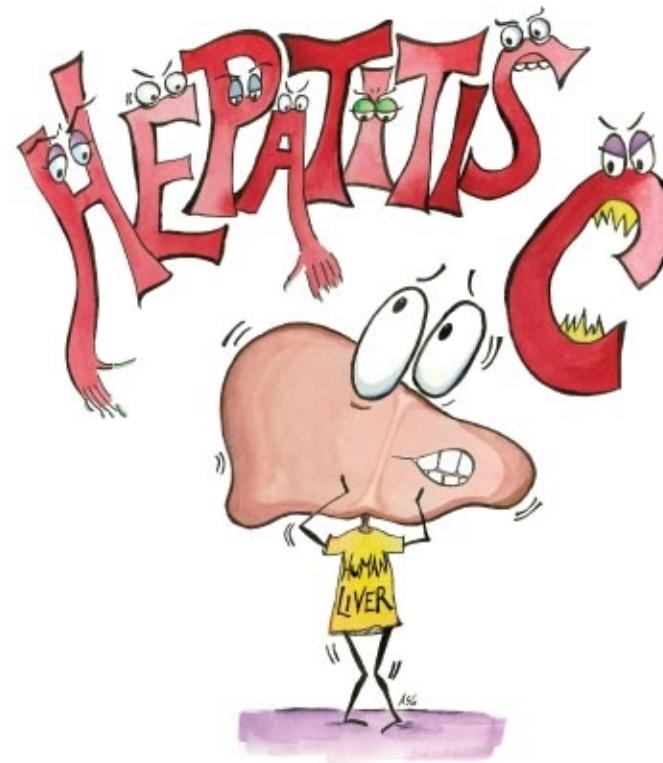


EARTH BOUNCE

Current HCV therapies



* non-nucleoside RNA polymerase inhibitor



No Liver, No Life.

Hepatitis C (HCV) could be attacking your liver and you may not even know it. Without a liver, you can't live. To find out more information about this deadly disease, visit www.cdc.gov/hepatitis







Drug resistance



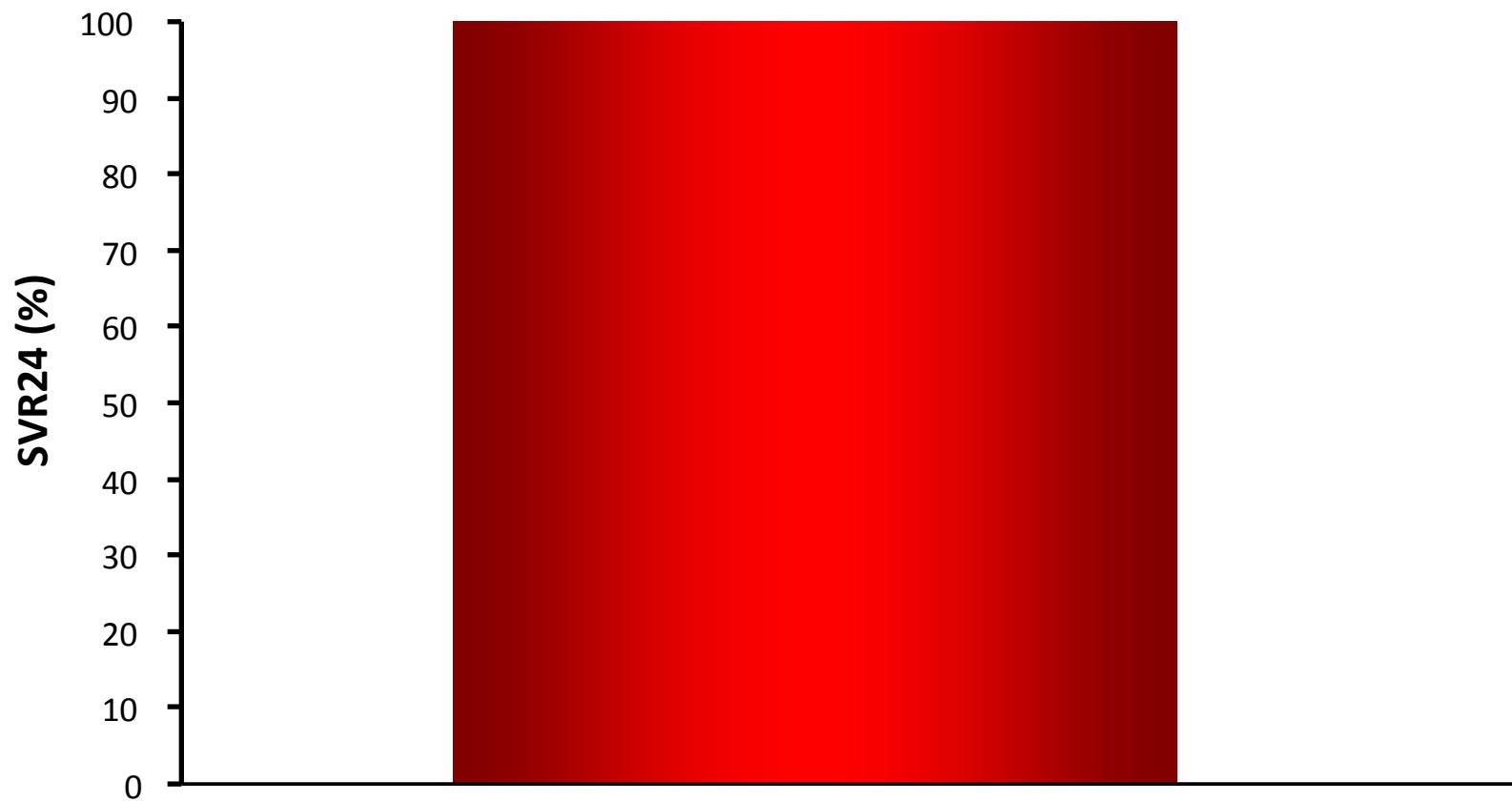
©Vincent Desjardins 2009





Summary of EASL and AASLD 2016

100%

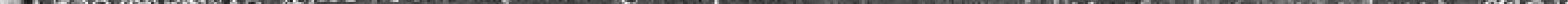


!

I
O

Funkce $f(x)$ má geometrický zájem, že je funkce prvního řádu. Tj. funkce prvního řádu je funkce s konstantním počtem hodnot výšky v každém bodě. Nejdříve je potřeba definovat funkci prvního řádu. Definice: $f(x) = f(x_0) + \frac{f(x+h) - f(x_0)}{h}$ je funkce prvního řádu, když pro všechny x a $x+h$ platí, že funkce má všechny vlastnosti funkce prvního řádu v bodě x_0 . Tedy $f(x) = f(x_0) + \frac{f(x+h) - f(x_0)}{h}$ je funkce prvního řádu, když pro všechny x a $x+h$ platí, že funkce má všechny vlastnosti funkce prvního řádu v bodě x_0 . Nejdříve je potřeba definovat funkci prvního řádu. Definice: $f(x) = f(x_0) + \frac{f(x+h) - f(x_0)}{h}$ je funkce prvního řádu, když pro všechny x a $x+h$ platí, že funkce má všechny vlastnosti funkce prvního řádu v bodě x_0 . Tedy $f(x) = f(x_0) + \frac{f(x+h) - f(x_0)}{h}$ je funkce prvního řádu, když pro všechny x a $x+h$ platí, že funkce má všechny vlastnosti funkce prvního řádu v bodě x_0 .



$\lim_{x \rightarrow x_0} f(x) = l$ (resp. $f(x) \rightarrow \pm\infty$ as $x \rightarrow x_0$) \Leftrightarrow  $\lim_{x \rightarrow x_0^-} f(x) = l$ (resp. $f(x) \rightarrow \pm\infty$ as $x \rightarrow x_0^-$) \wedge $\lim_{x \rightarrow x_0^+} f(x) = l$ (resp. $f(x) \rightarrow \pm\infty$ as $x \rightarrow x_0^+$)

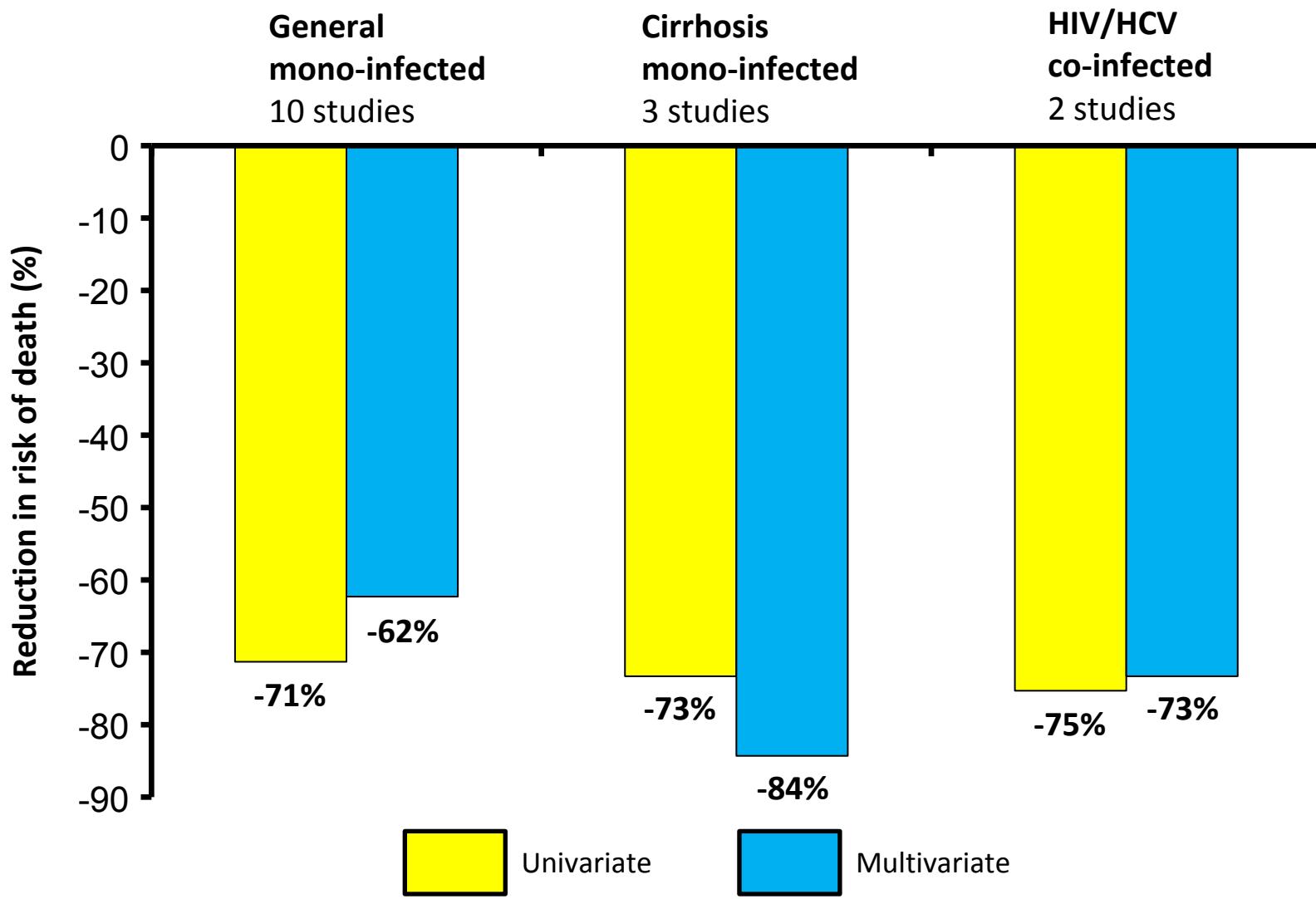
Hodnotě f v x_0 je nazývána rovnost $f(x_0) \in \mathbb{R}$, kde $x_0 \in M$.

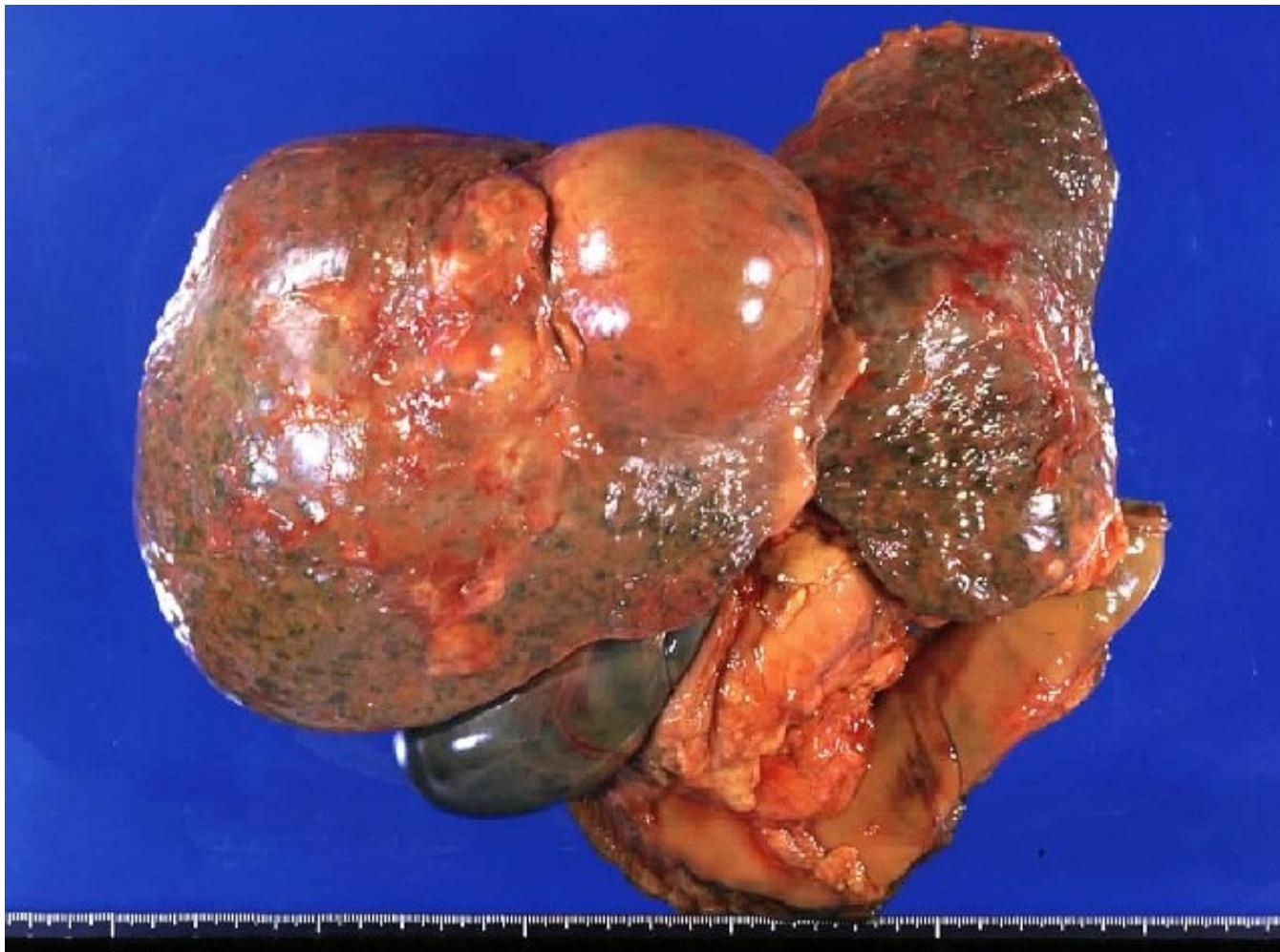
HCV is an
Easy-to-
Cure
Virus





Risk of death (all cause) for SVR vs non-SVR: Univariate and multivariate analyses



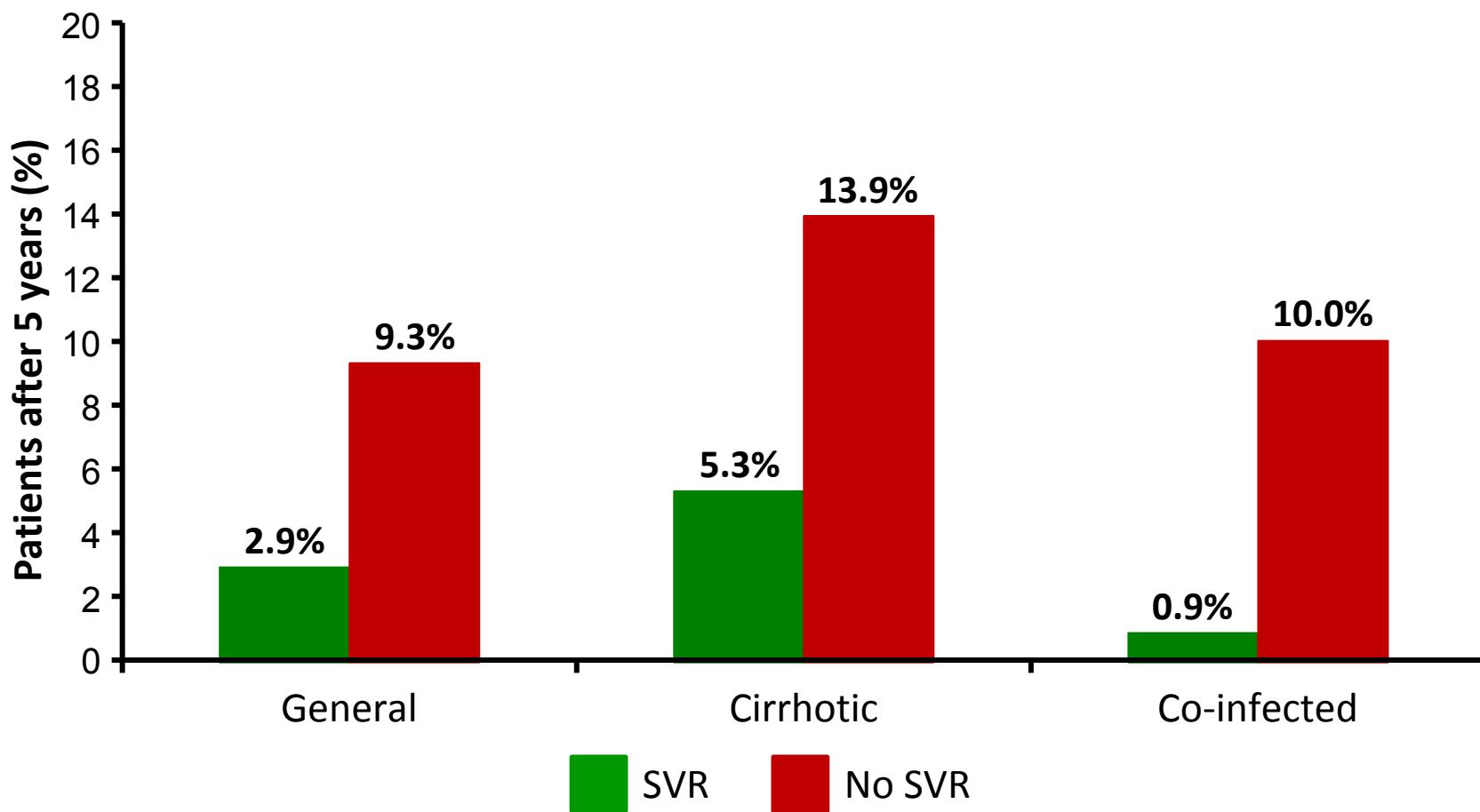


5-year risk of hepatocellular carcinoma by SVR

General: 21 studies
n=12,496
Avg. FU=6.1 years

Cirrhotic: 18 studies
n=4,987
Avg. FU=6.6 years

HIV/HCV: 3 studies
n=2,085
Avg. FU=4.7 years





Liver Transplant Surgery

5-year risk of liver transplant by SVR

General: 1 study

n=108

Avg. FU=4.2 years

Cirrhotic: 2 studies

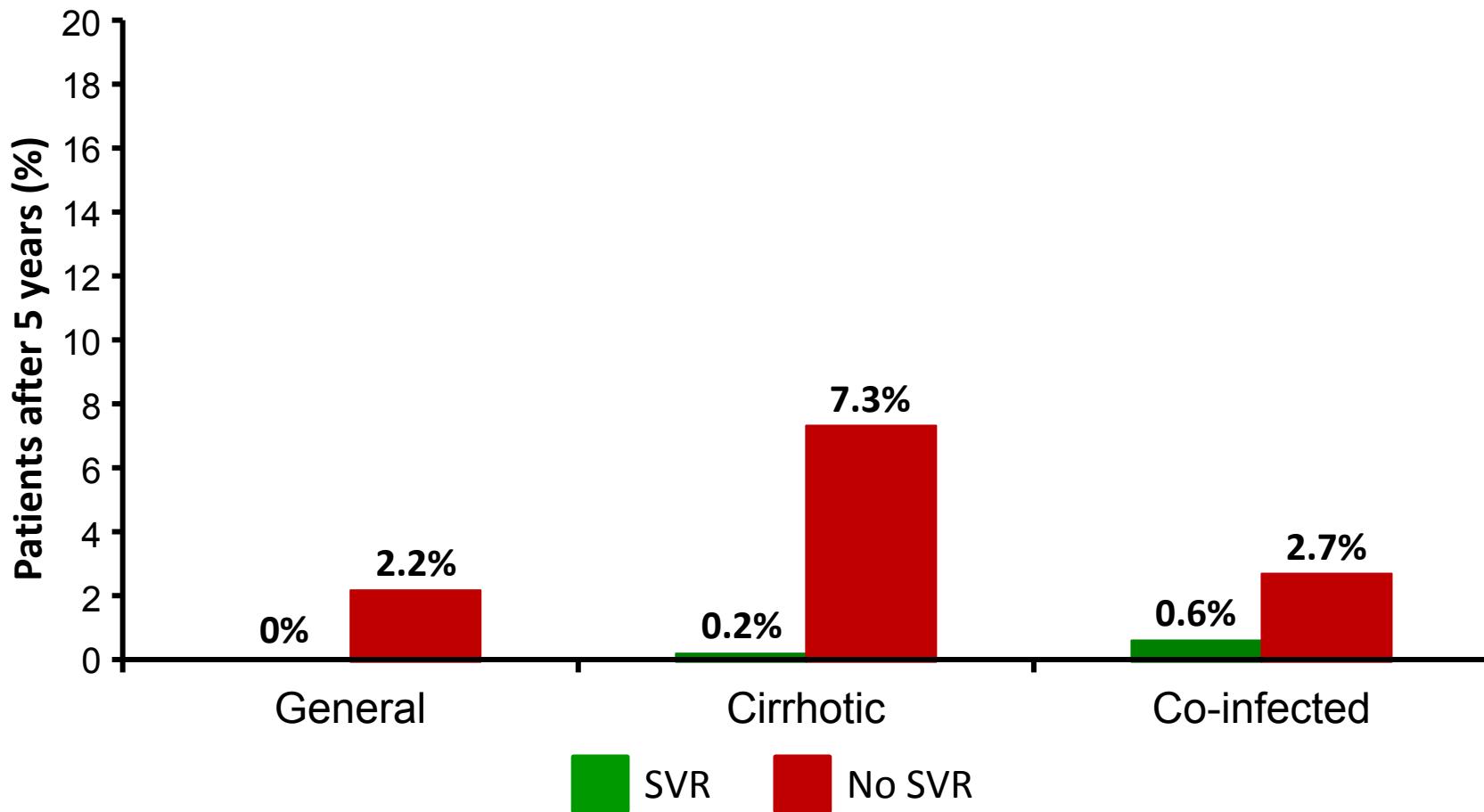
n=1,046

Avg. FU=7.7 years

HIV/HCV: 2 studies

n=2,039

Avg. FU=4.9 years





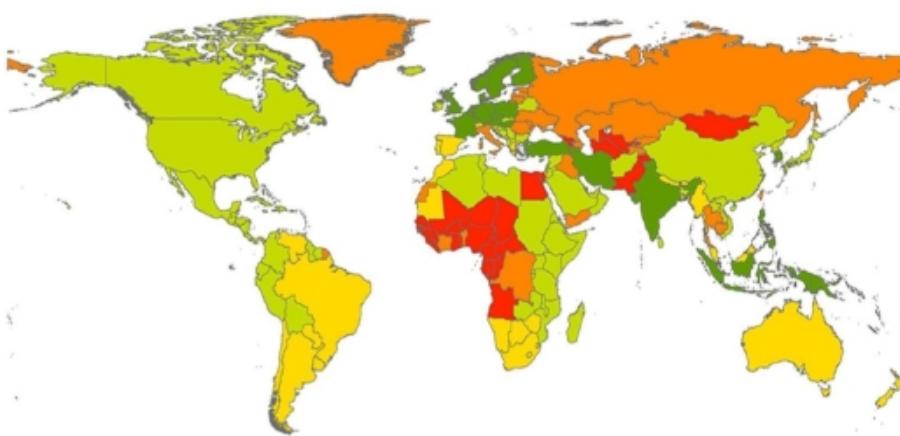
quaestio quaestio qo < ? ? ? ?

HIV is a special population?

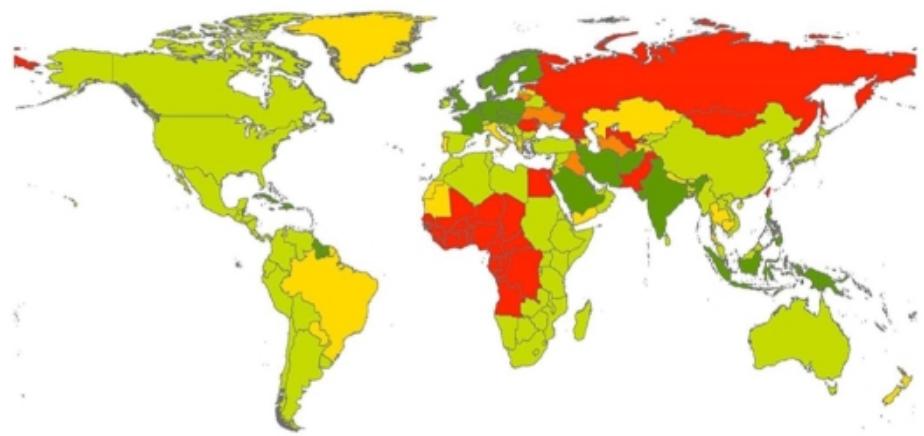


Reported HCV prevalence and infections among adults

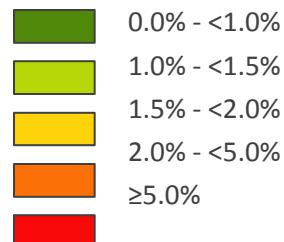
**Anti-HCV prevalence – adults
(reported and estimated)**



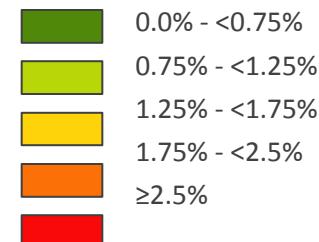
**Viraemic prevalence – adults
(reported and estimated)**



Anti-HCV prevalence



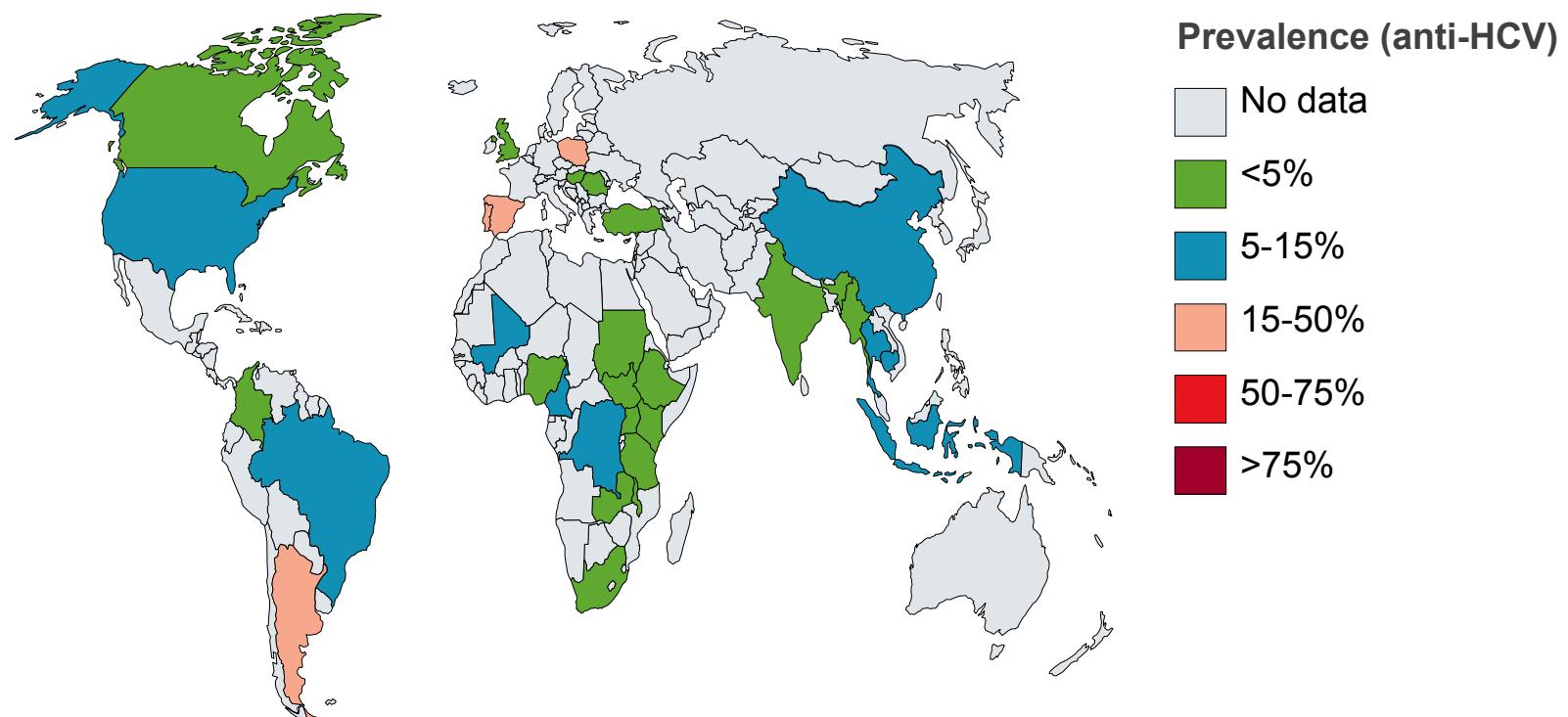
Viraemic prevalence



Prevalence and burden of HCV co-infection in PLWHIV: A global systematic review and meta-analysis

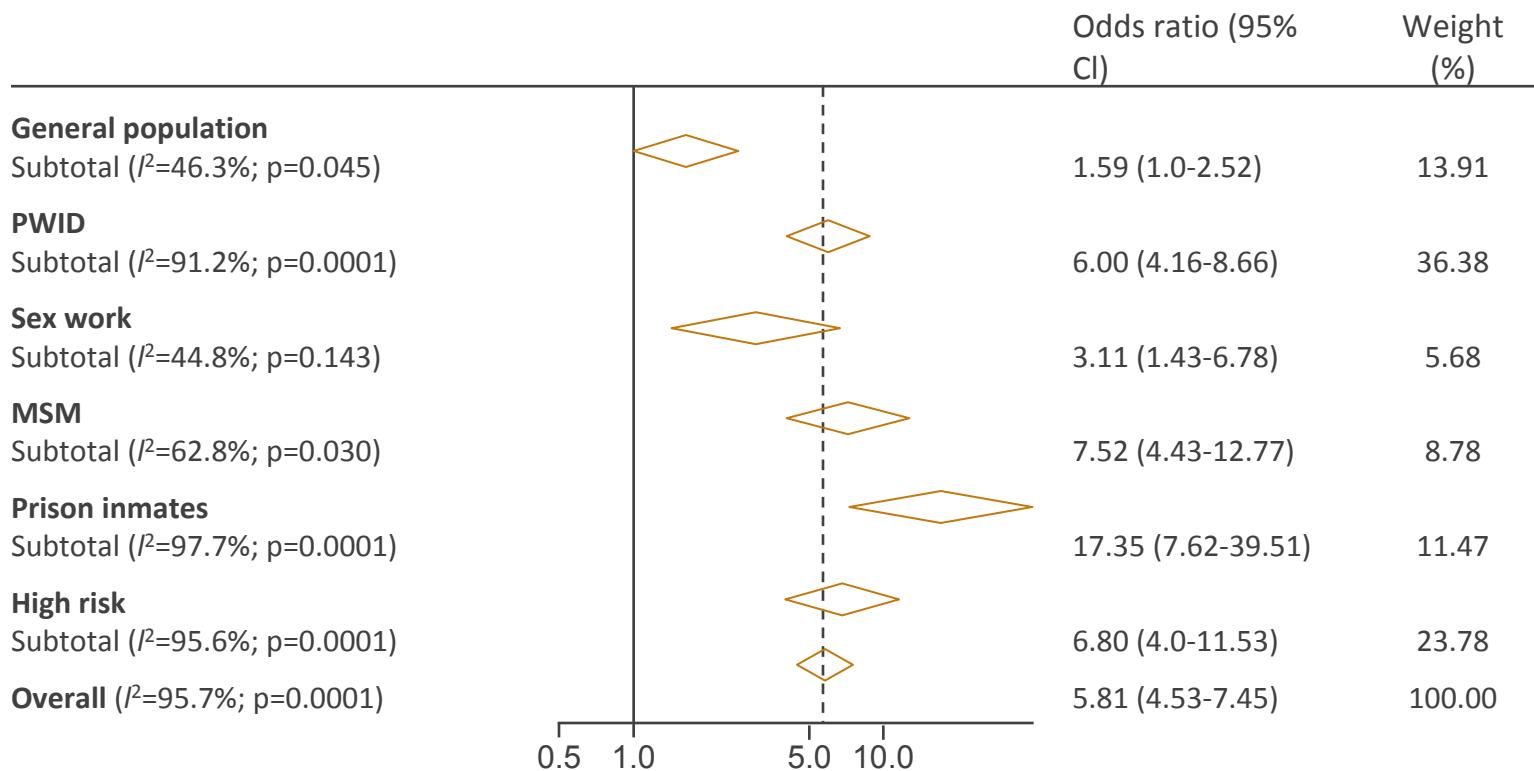
Best estimates of prevalence of HCV co-infection in four population samples

PLWHIV (heterosexual exposure and pregnant women)



Prevalence and burden of HCV co-infection in PLWHIV: A global systematic review and meta-analysis

Forest plot showing meta-analysis of odds of HCV antibody in selected HIV-positive populations versus HIV-negative population groups

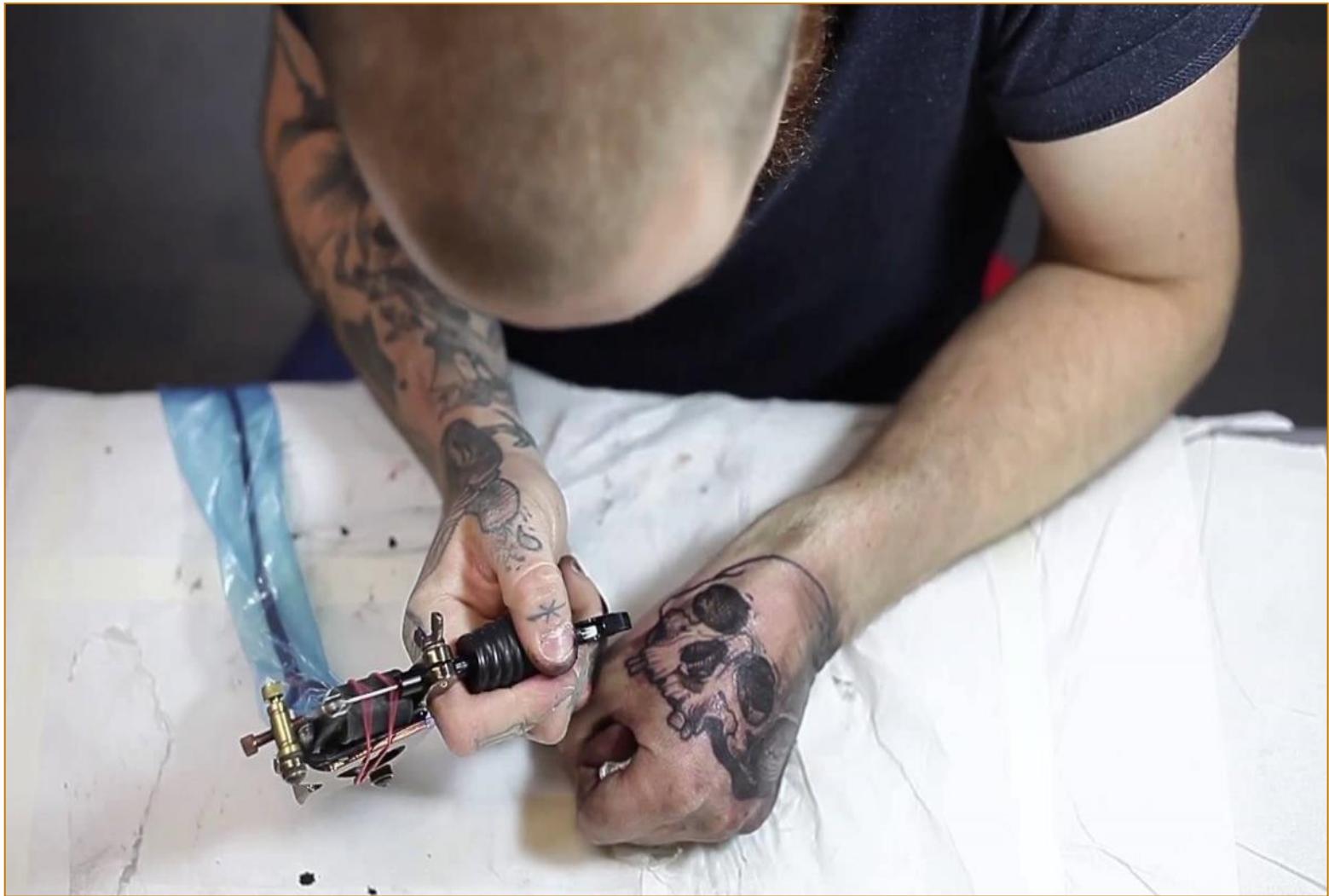


PWID, people who inject drugs; MSM, men who have sex with men

Platt L, et al. *Lancet Infect Dis* 2016;16(7):797-808.









KALEIDOSCOPE PRESENTS THEATRE COMPANY

NO SEX
Please
We're
British



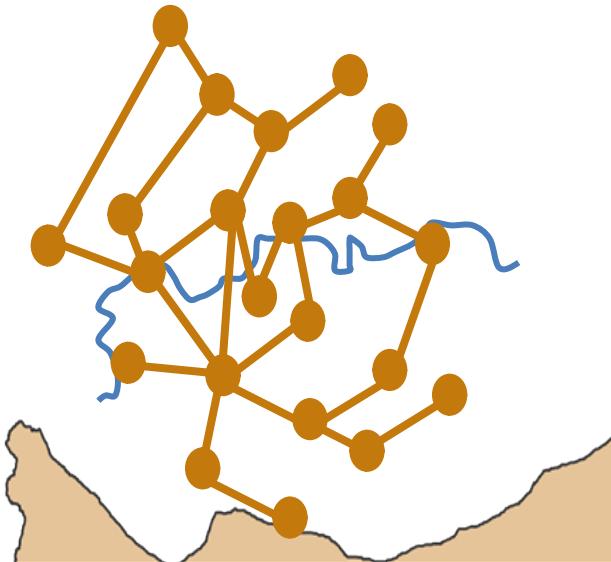


IRIN



HCV transmission among HIV +ve MSM

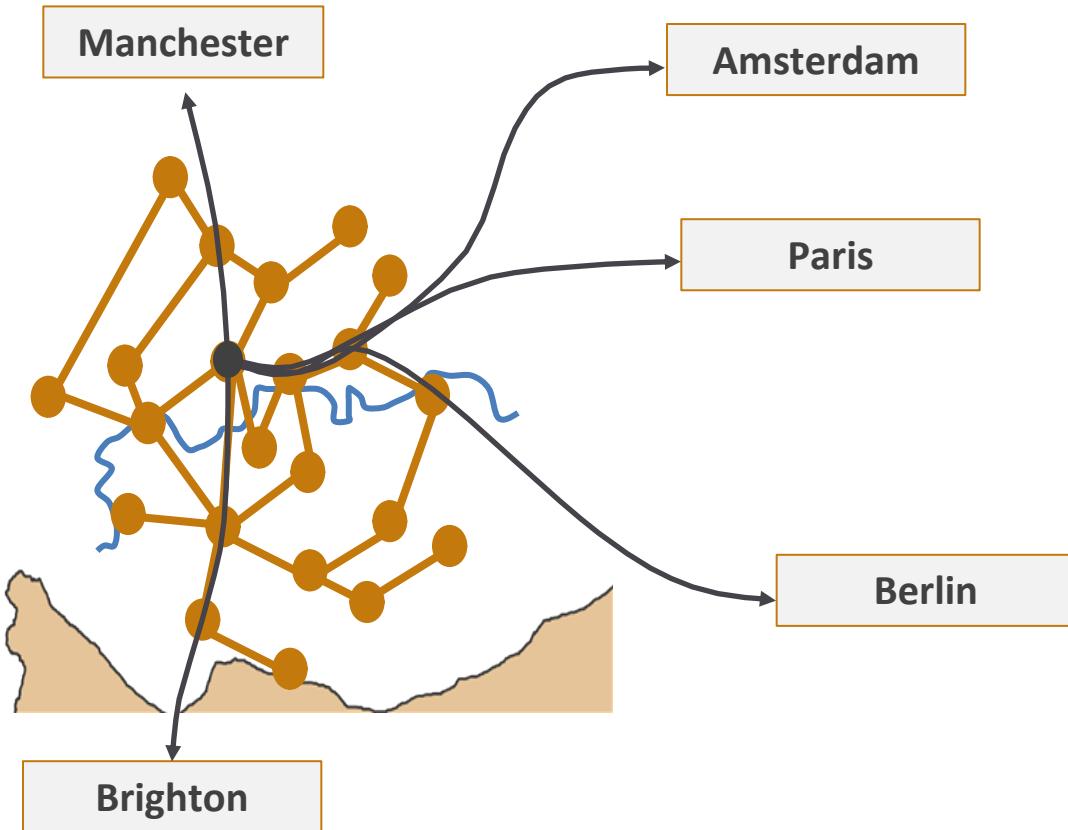
London is experiencing an epidemic of HCV among HIV +ve MSM



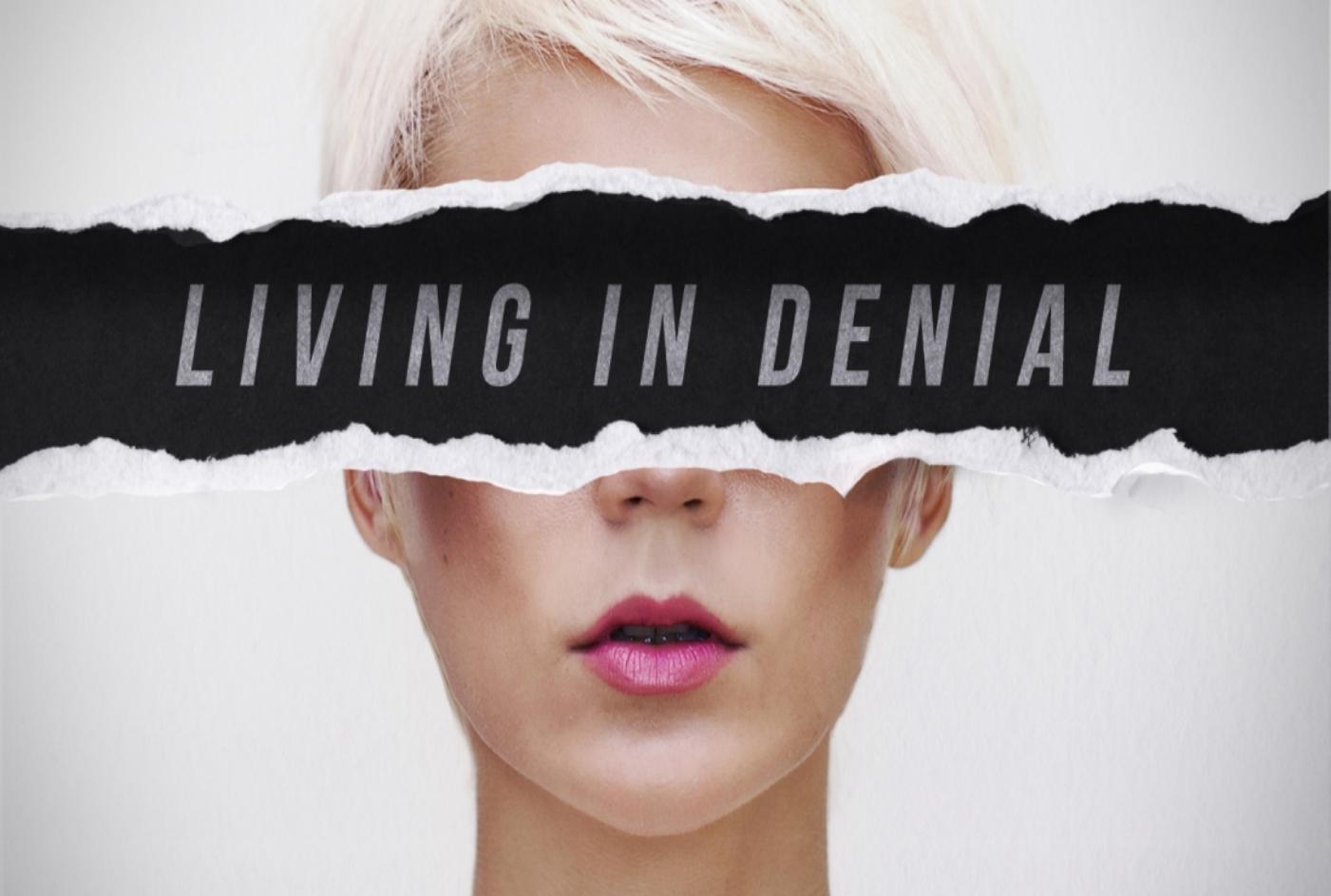
- Networks of MSM who:
 - Practice HIV serosorting leading to unprotected sex
 - Have high-risk sex practices leading to blood exposure
 - Use stimulant drugs leading to sexual disinhibition and prolonged sexual activity

HCV transmission among HIV +ve MSM

MSM networks extend to other cities in the UK and Europe

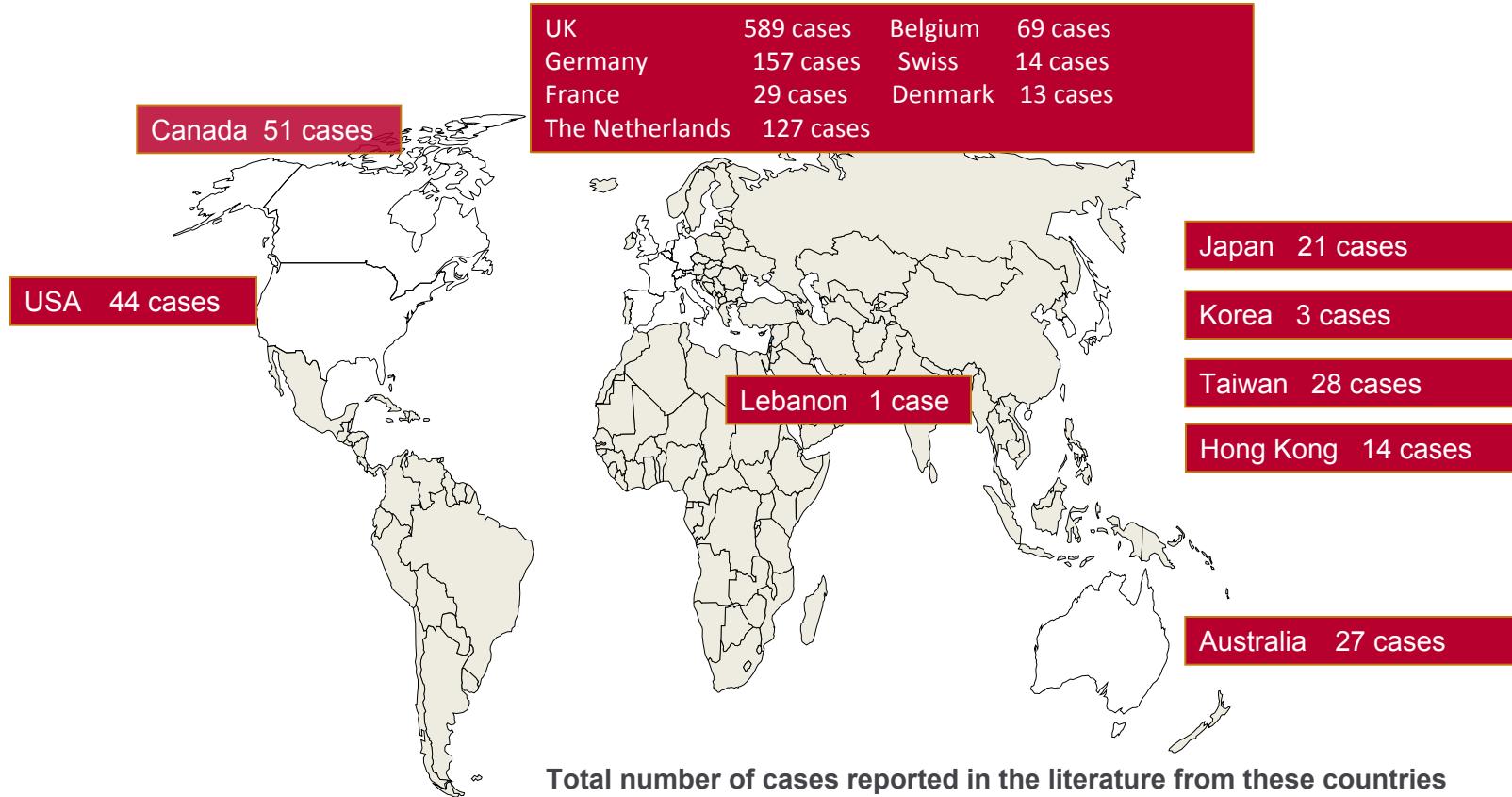


- Phylogenetic analysis has shown MSM-specific HCV transmission networks between European cities

A close-up photograph of a woman's face, from the nose up. She has short, light-colored hair and is wearing bright pink lipstick. The image is framed by torn, white paper edges at the top and bottom, creating a layered effect. The background is a plain, light color.

LIVING IN DENIAL

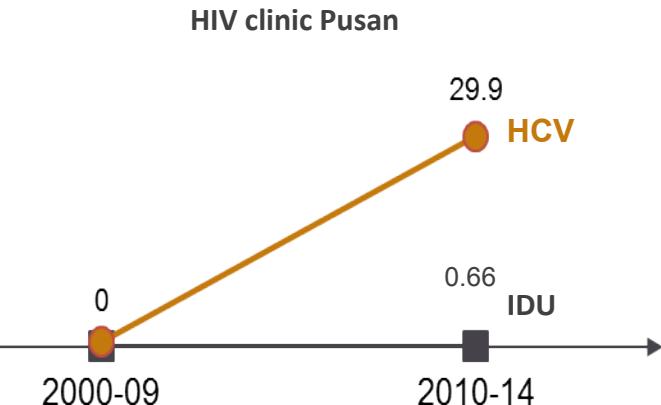
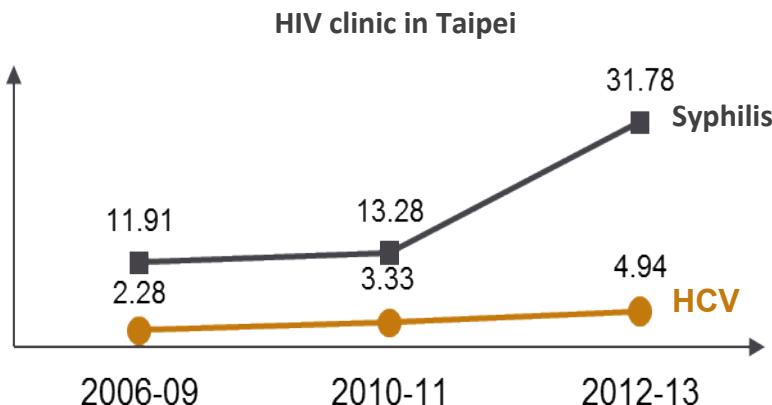
Acute outbreaks of HCV have been reported in HIV +ve MSM across the world



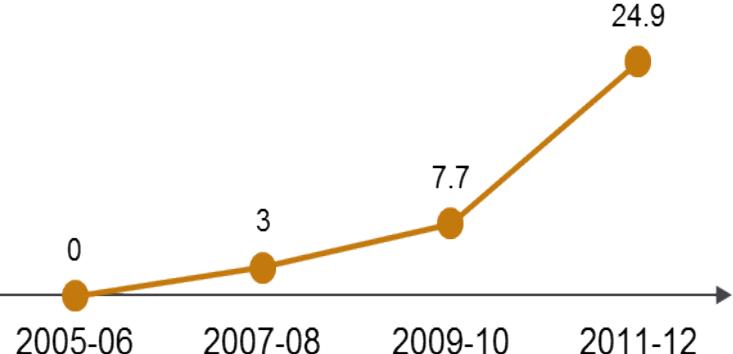
1. Burchell AN, et al. Can J Infect Dis Microbiol 2015;26:17–22; 2. Luetkemeyer A, et al. J Acquir Immune Defic Syndr 2006;41:31–6; 3. Cox A, et al. Gastroenterology 2009;136:26–31;
4. Giraudon I, et al. Sex Transm Infect 2008;84:111–5; 5. Ruf M, et al. Euro Surveill 2008;13:1–3; 6. Vogel M, et al. Clin 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 Syndr 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

Increasing HCV incidence in Japan, South Korea, Hong Kong as well as Taiwan

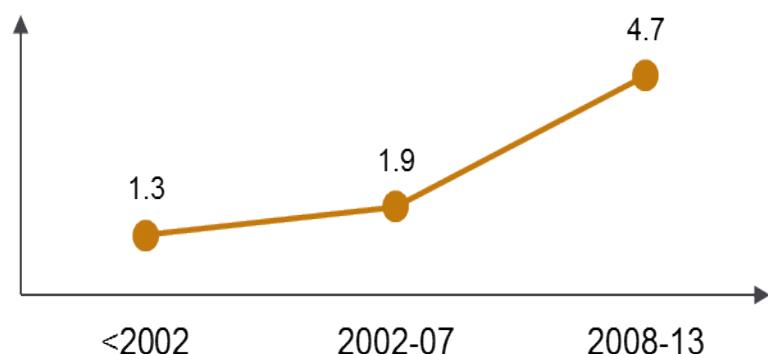
HCV incidence, 1000 person-years



HIV clinic in Tokyo



HIV clinic in Hong Kong



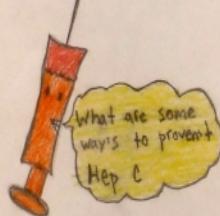
VTC, voluntary testing and counselling centre

Tsai J-C, et al. BMJ Open 2015;5:e008406; Lee S, et al. Korean J Intern Med 2016; doi: 10.3904/kjim.2015.353; Nishijima T, et al. J Acquir Immune Defic Syndr 2014;65:213–17; Lin AW, et al. J Int AIDS Soc 2014, 17(Suppl 3):19663

Hep C

Prevention:

- Do not share a toothbrush, scissors, nail clippers, tweezers, drinks, smokes, make up, drug pipes.
- use latex condoms during sexual intercourse.
- if you want to get a tattoo or have your body pierced make sure the practitioner sterilizes the instrument and supplies.
- avoid using illegal street drugs (including inhalers or "snorting" cocaine) or find a Drug Rehabilitation program. if you do inject drugs. Do not share needles or other equipment (such as cotton, spoons, and water) with other users.



s a f e

Don't share

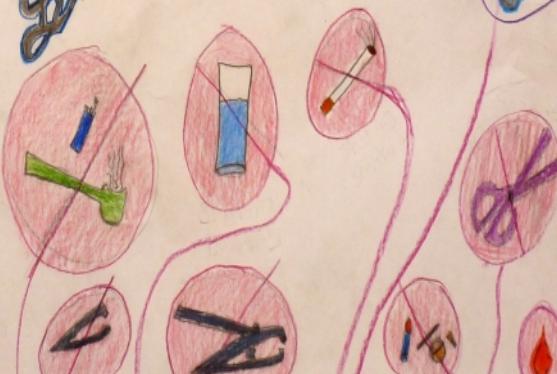
The Hep C virus spreads through blood and can be transmitted in the following ways:

- Sharing needles while using illegal street drugs.
- using non-sterile instruments and needles for tattooing and body piercing.
- Blood Transfusion.
- sharing personal care items.
- Engaging in High-risk sexual behaviour.

Possible symptoms:

- pain in the upper right quadrant of abdomen
- nausea and vomiting
- loss of appetite
- jaundice
- fatigue
- itching

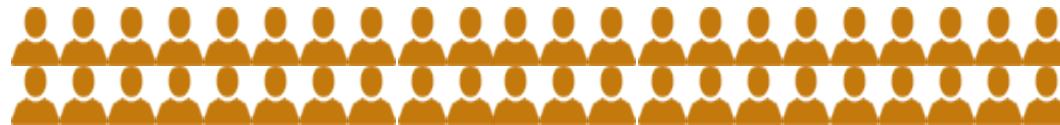
GET TESTED
GET TREATED



Cases of acute HCV are now starting to emerge in HIV MSM

Retrospective review of HCV testing in HIV MSM
London sexual health clinic Jan 2010 to May 2014

44 cases of HCV identified



Mean age 37 years

10 years ago



TODAY



Gay scene is highly sexualized



The popularity of bareback sites

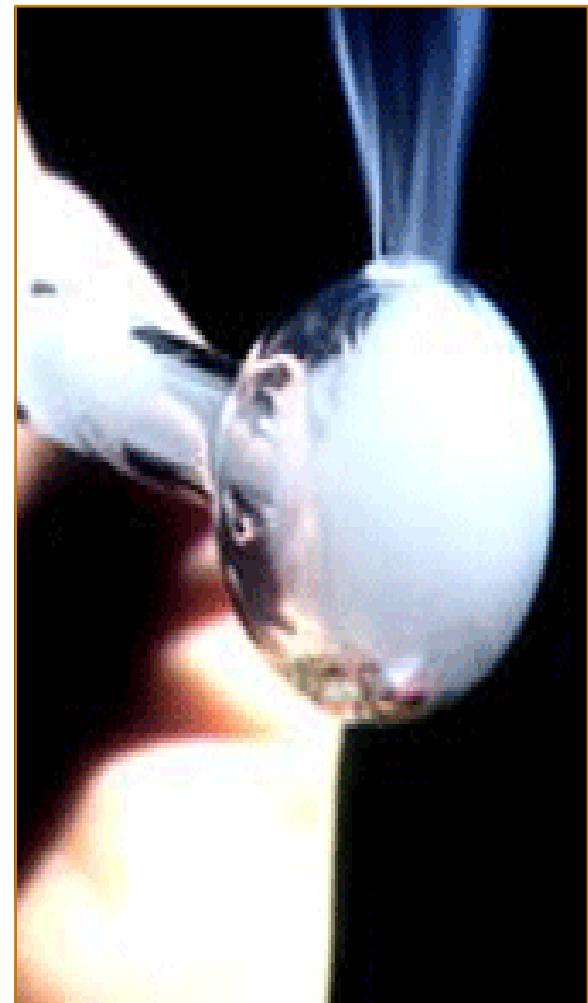
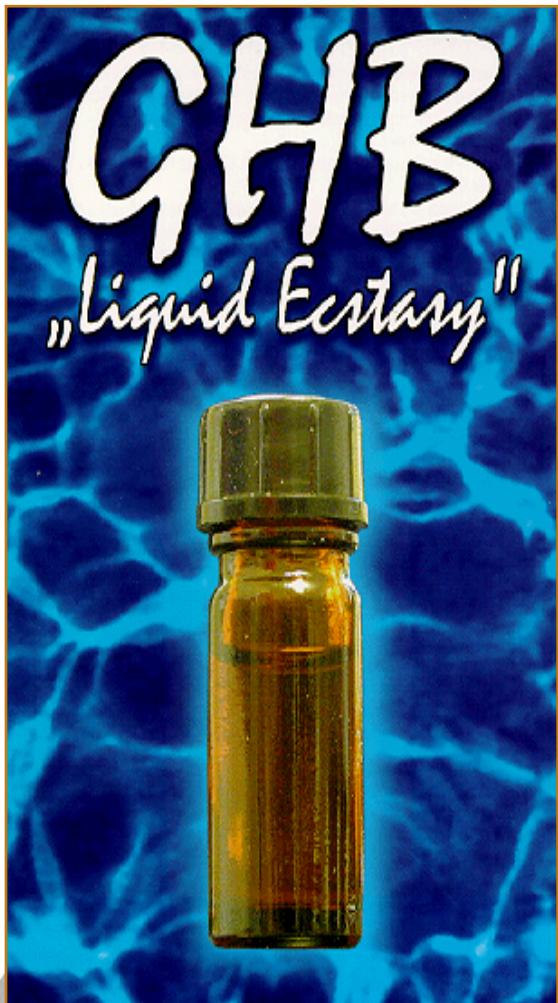




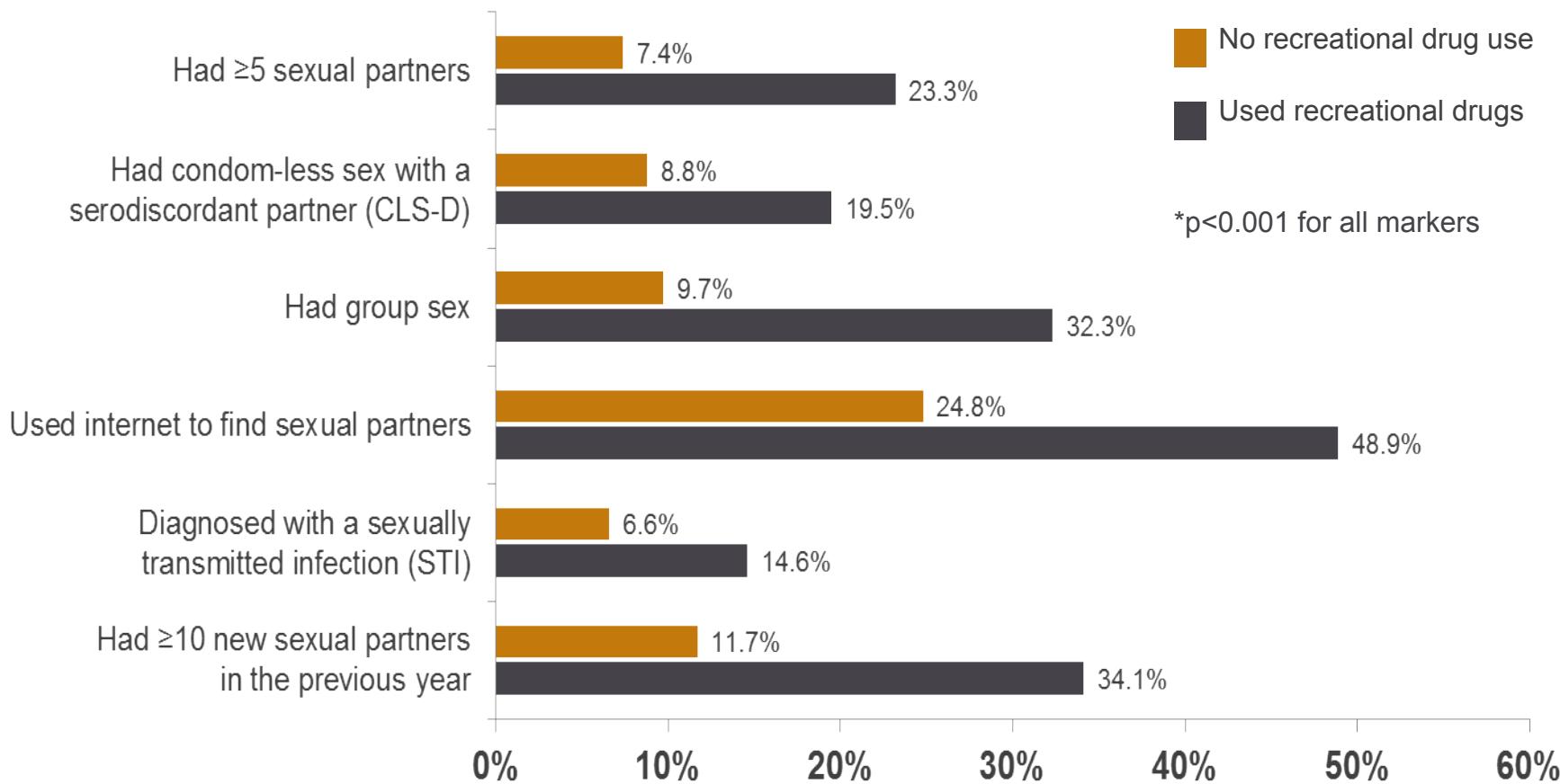
**IDU or 'slamming' has
become more common
place**

**Social site and apps have
made finding Chem-Sex
easy and anonymous**

“Club Drugs” are problematic drugs

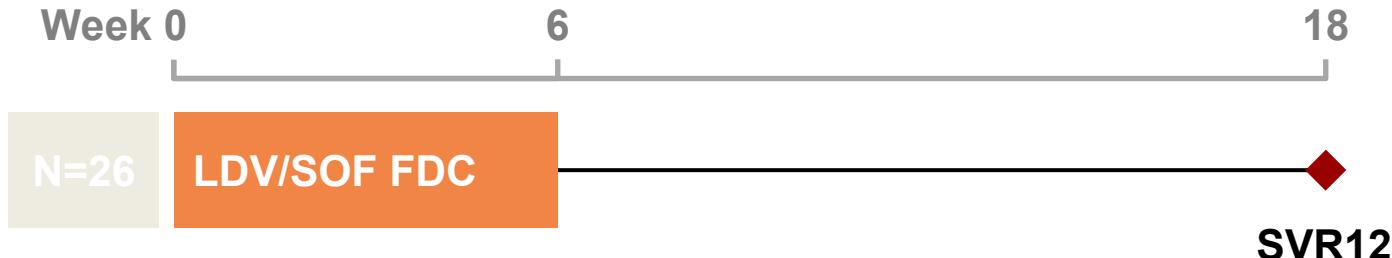


Recreational drug use and markers of high-risk sex



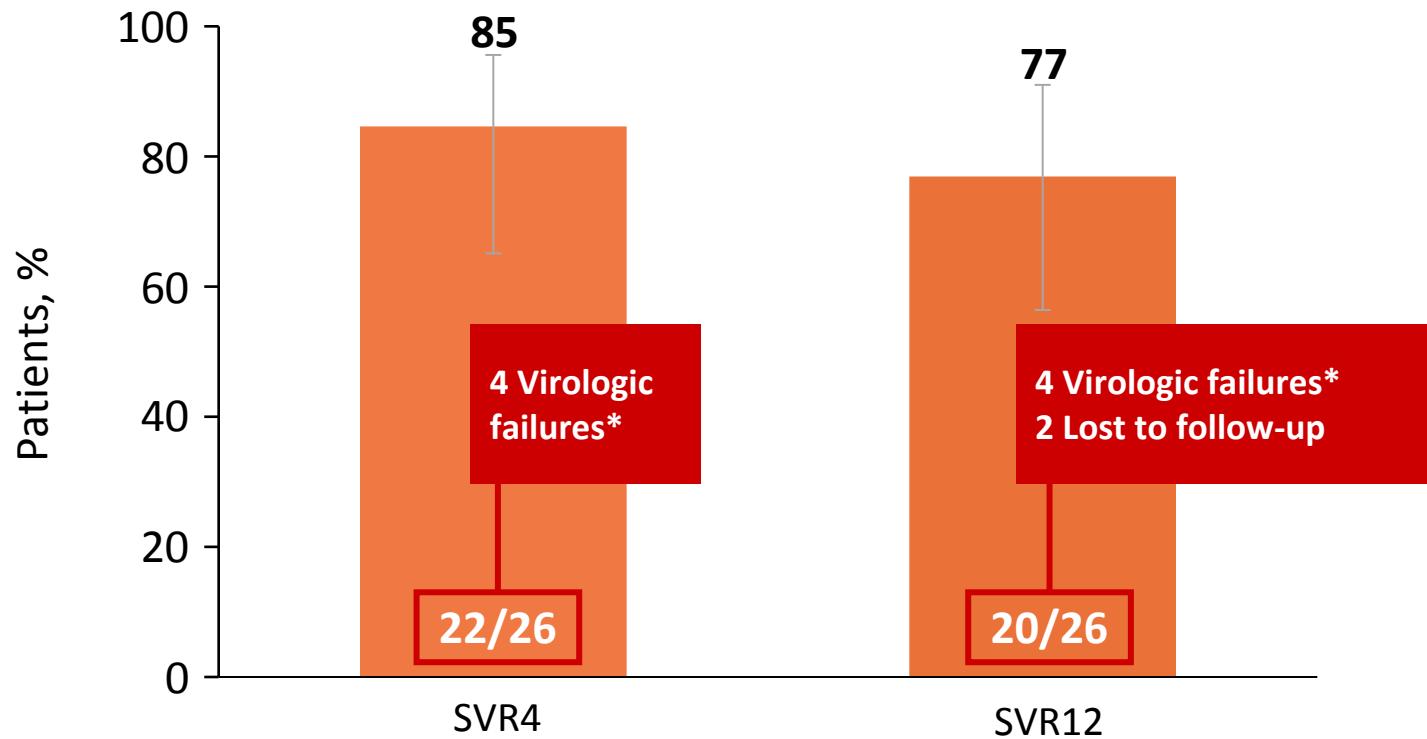
n= 2,248 MSM denominators vary
Three-month recall period unless otherwise specified

Study Design



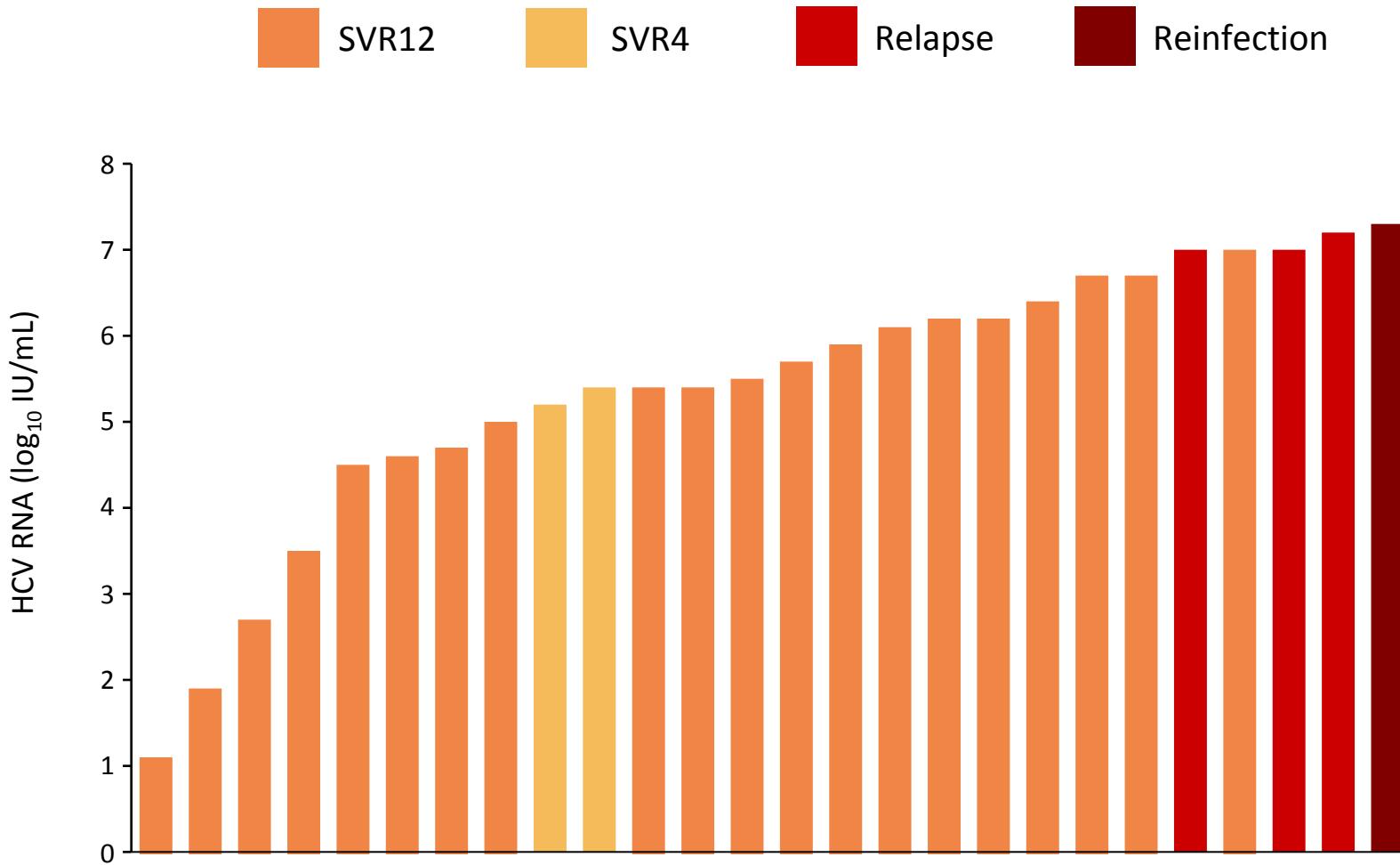
- Patients with chronic HIV and acute HCV infection
 - HCV GT 1 or 4
 - ART consistent with LDV/SOF co-administration with HIV <200 copies/mL or not receiving ART with no plans to start
- Acute HCV infection with detectable HCV RNA (Roche COBAS® AmpliPrep/COBAS® TaqMan® version 2.0, LLOQ=15 IU/mL) for <24 weeks, defined by
 - HCV RNA-positive and negative anti-HCV antibody/HCV RNA test within last 6 months or
 - Elevated ALT/AST >2.5 x ULN in past 6 months with normal LFTs in past year, and other causes excluded
- 5 sites in Germany and UK

Results: SVR4 and SVR12



*3 patients relapsed, 1 was reinfected (GT 1a at baseline, 4d in post-treatment).
Error bars represent 95% confidence intervals.

Results: Baseline HCV RNA and Treatment Outcome (SVR)



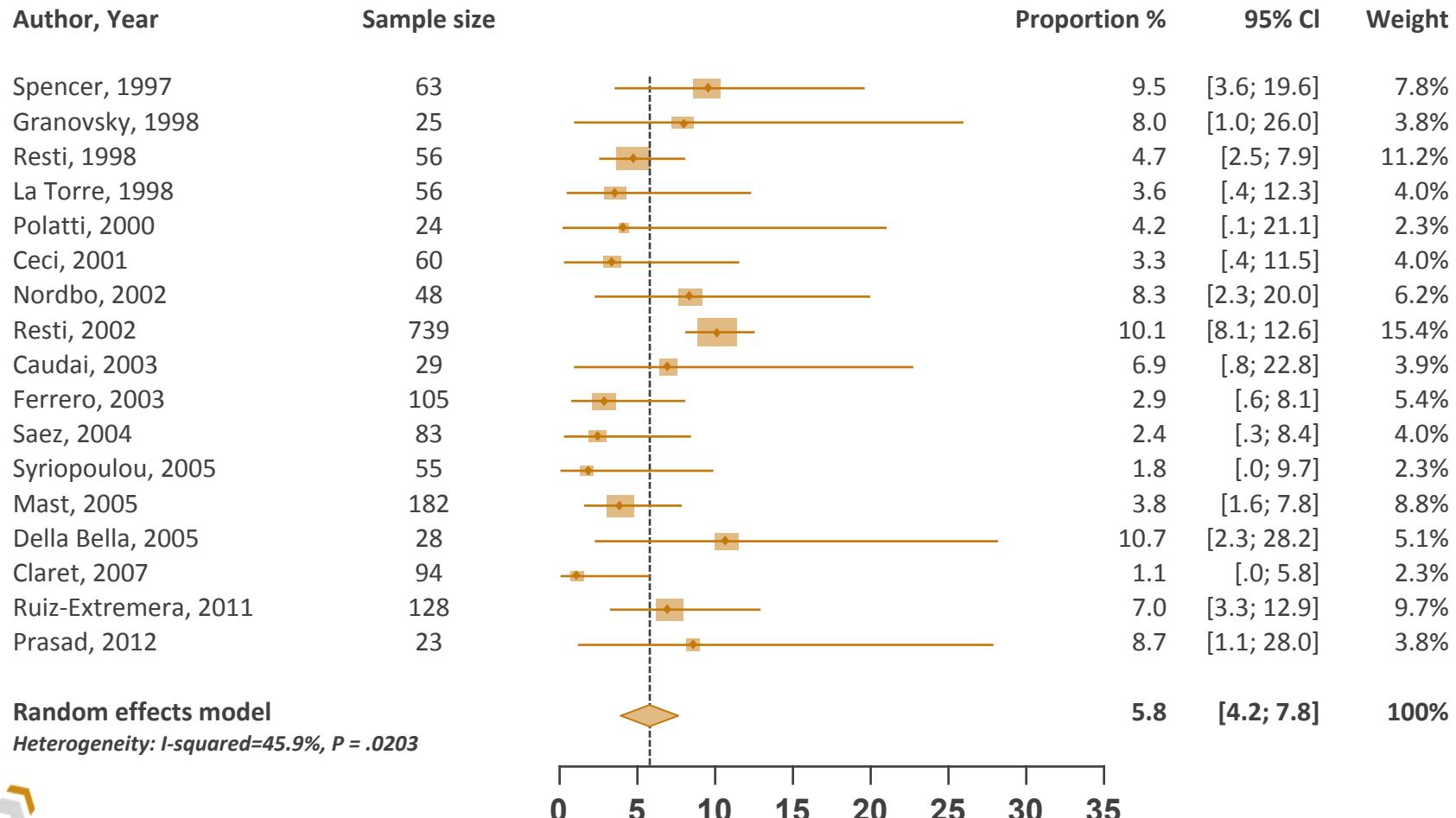


PARTNERS study

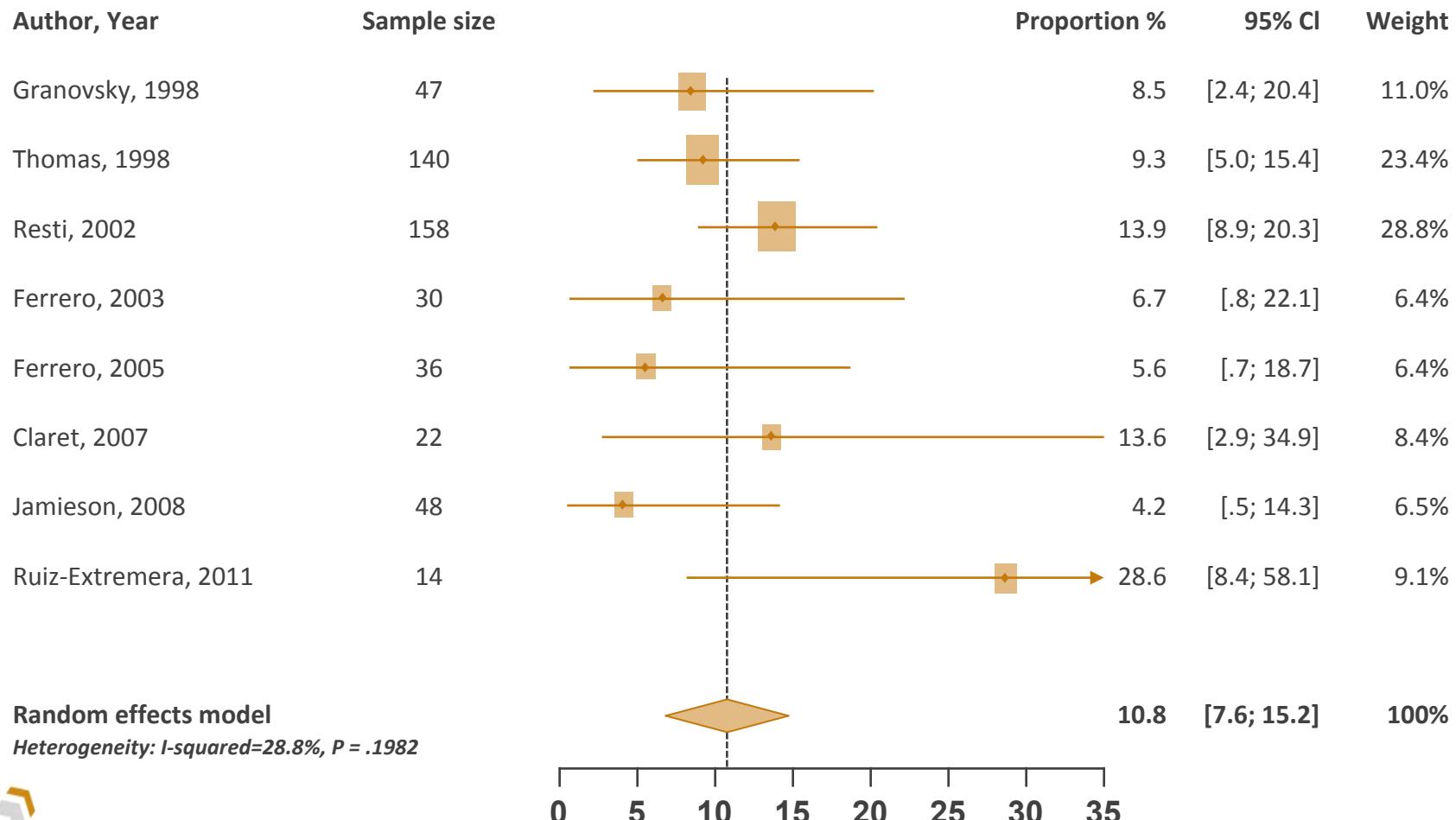
- 500 HCV infected individuals
- Monogamous heterosexual relationship for 15 years
- 20 partners HCV infected (4%)
- 9 couples had concordant genotype/serotype
- Viral isolates in three couples (0.6%) were highly related, consistent with transmission of virus within the couple
- Based on 8,377 person-years of follow-up, the maximum incidence rate of HCV transmission by sex was 0.07% per year (95% confidence interval, 0.01-0.13) or approximately one per 190,000 sexual contacts



HIV -ve women



HIV +ve women

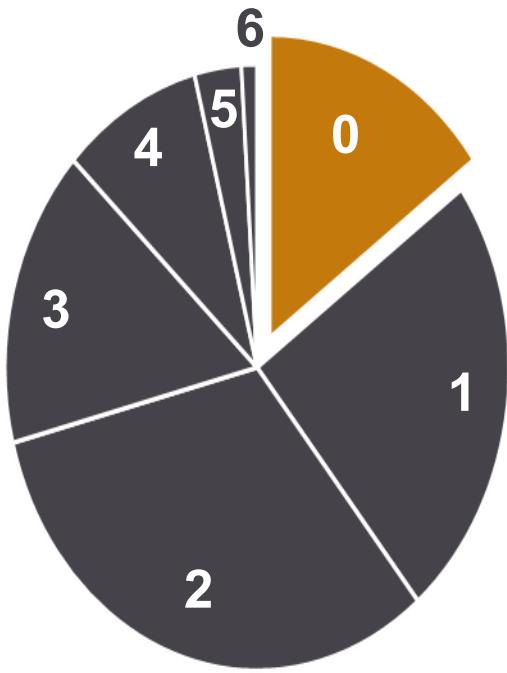


Treatment should be prioritized

| Treatment | |
|------------------|--|
| Indicated | All naive and experienced pts with liver disease |
| Prioritized | <ul style="list-style-type: none">• Pts with fibrosis (F3) or cirrhosis (F4) including compensated cirrhosis• HIV coinfection, HBV coinfection• Indication for liver transplantation• HCV recurrence after transplantation• Extra-hepatic manifestations• Debilitating fatigue• Risk of transmitting HCV |
| Justified | Pts with moderate fibrosis (F2) |
| Deferred | Pts with no or mild (F0-F1) disease and no extra-hepatic manifestations |
| Not recommended | Pts with limited life expectancy due to non-liver comorbdities |

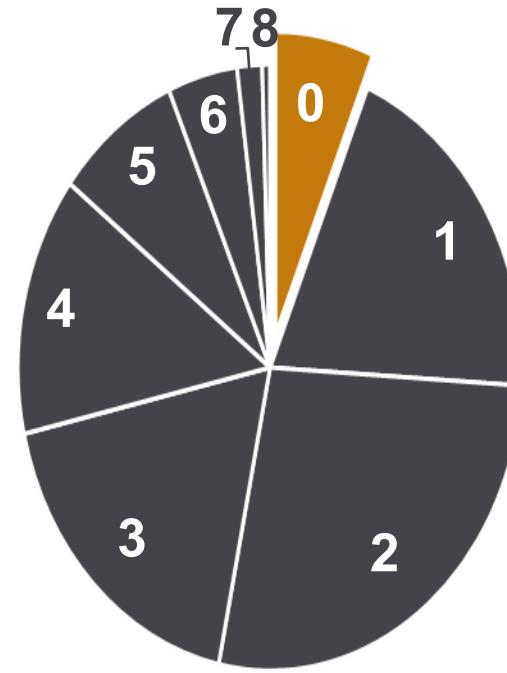


HIV/HCV co-infected patients are unique in some ways...



Multi-morbid clinical conditions among HIV/HCV co-infected IDUs in Baltimore (n=362)

Multimorbid conditions included diabetes (HbA1c and medication use), obstructive lung disease (Ratio of FEV to forced vital capacity), anemia (hemoglobin), obesity (BMI), kidney dysfunction (urine protein-creatinine, GFR), Hypertension (blood pressure and medication use), liver cirrhosis (Fibroscan)

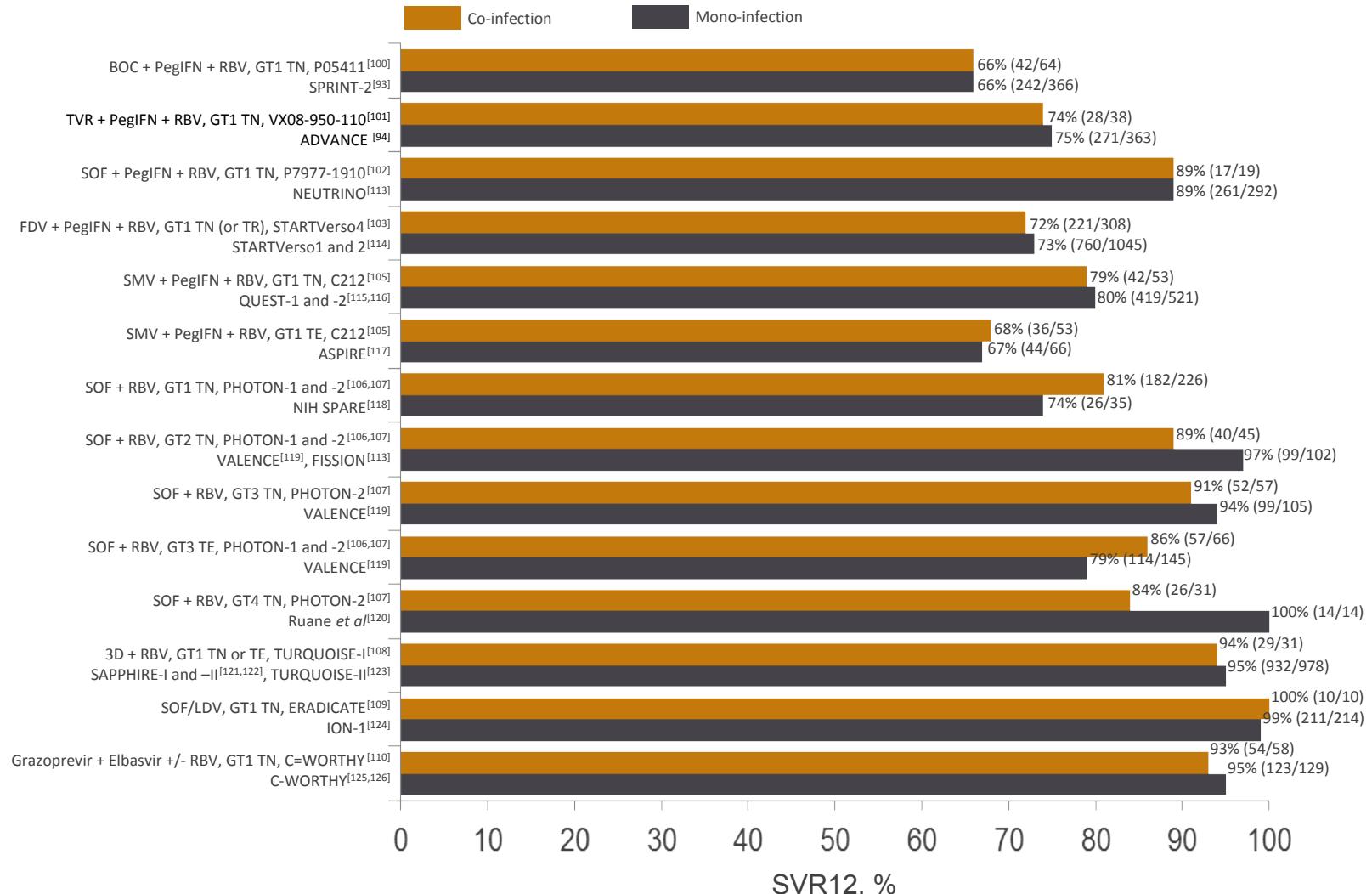


Stability factors among HIV/HCV co-infected IDUs in Baltimore (n=560)

Daily injection drug use, noninjection drug use, alcohol abuse, ≥1 mental health condition, suicidal ideation, incarceration, income < 5000 per year, lack of health insurance, no primary care.

Do HIV co-infected respond differently to mono-infected patients?

Treatment regimens, patient characteristics, studies [Refs]



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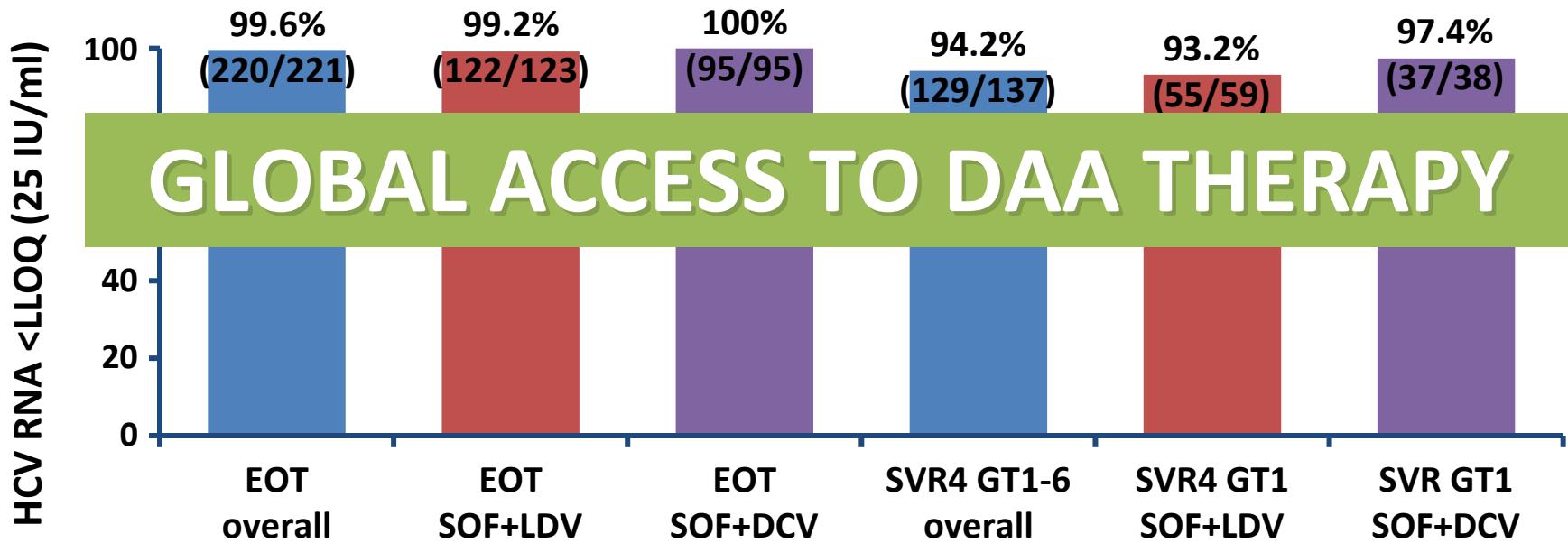
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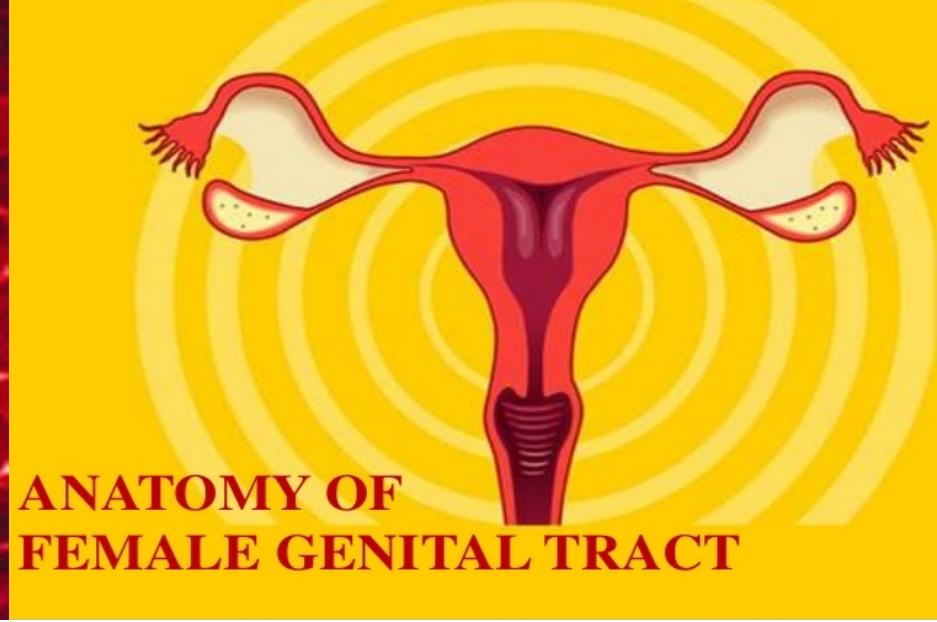
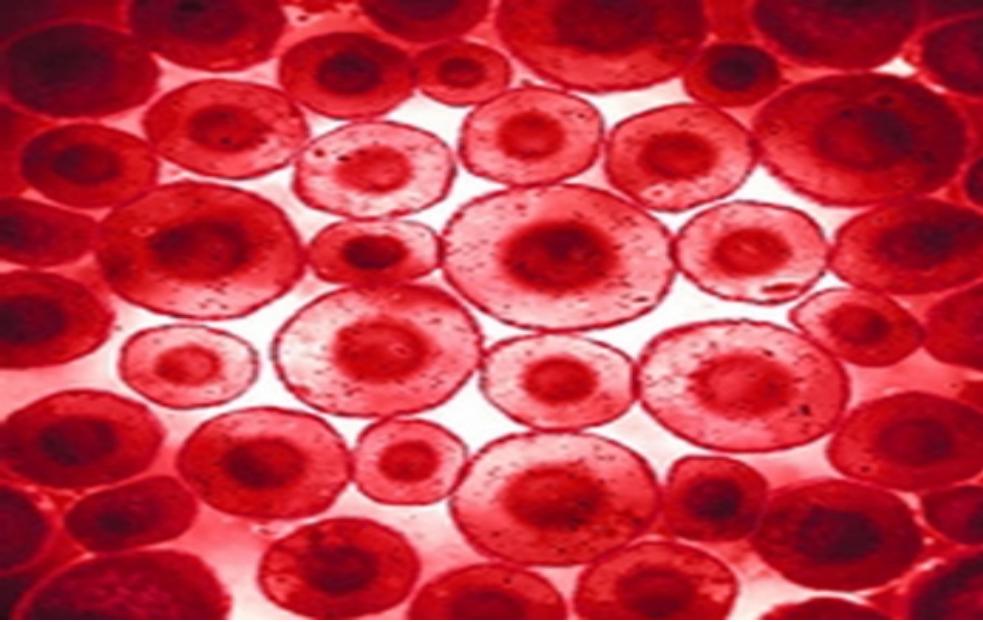


.Real life is overrated.
<http://nonnetta.deviantart.com>

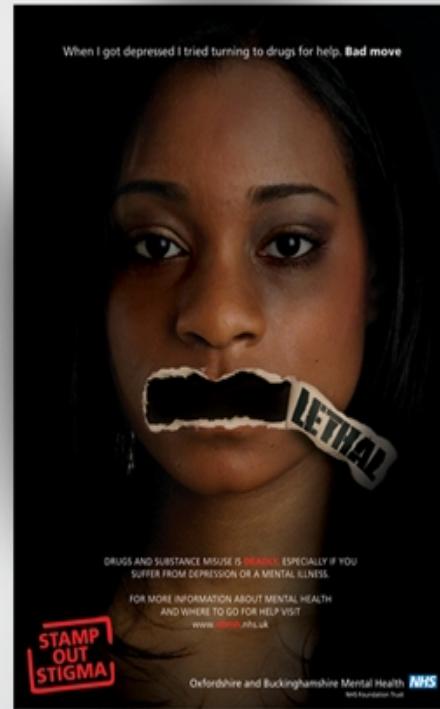
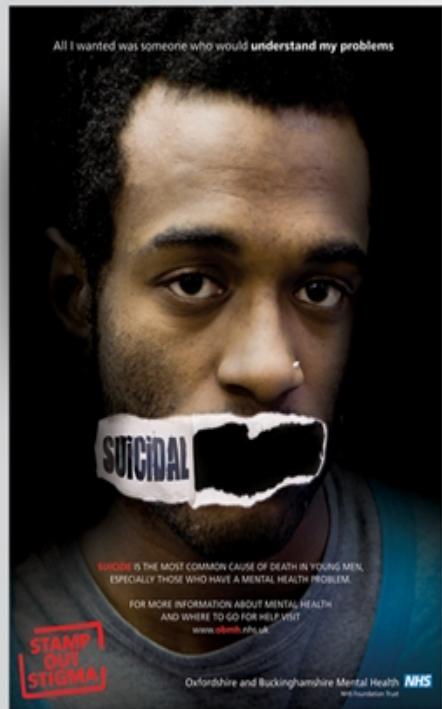
Redemption-1 HCV RNA <LLOQ at EOT and SVR4



- At the end of treatment 99.6% of patients were <LLOQ
 - One virological breakthrough reduced the result of LDV
- The overall SVR4 rate was 94.2%
- Looking at GT1 only the results of LDV and DCV were similar, with the LDV result again suffering from that breakthrough patient (S282T RAV)



**ANATOMY OF
FEMALE GENITAL TRACT**





JOE BOXER

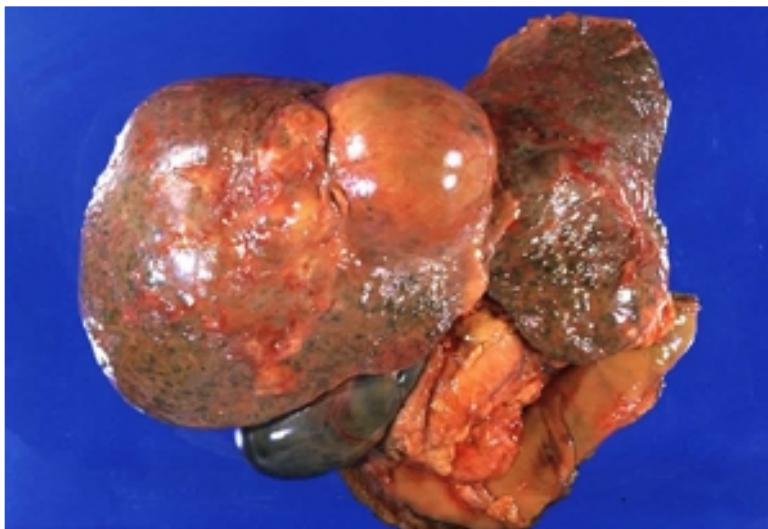
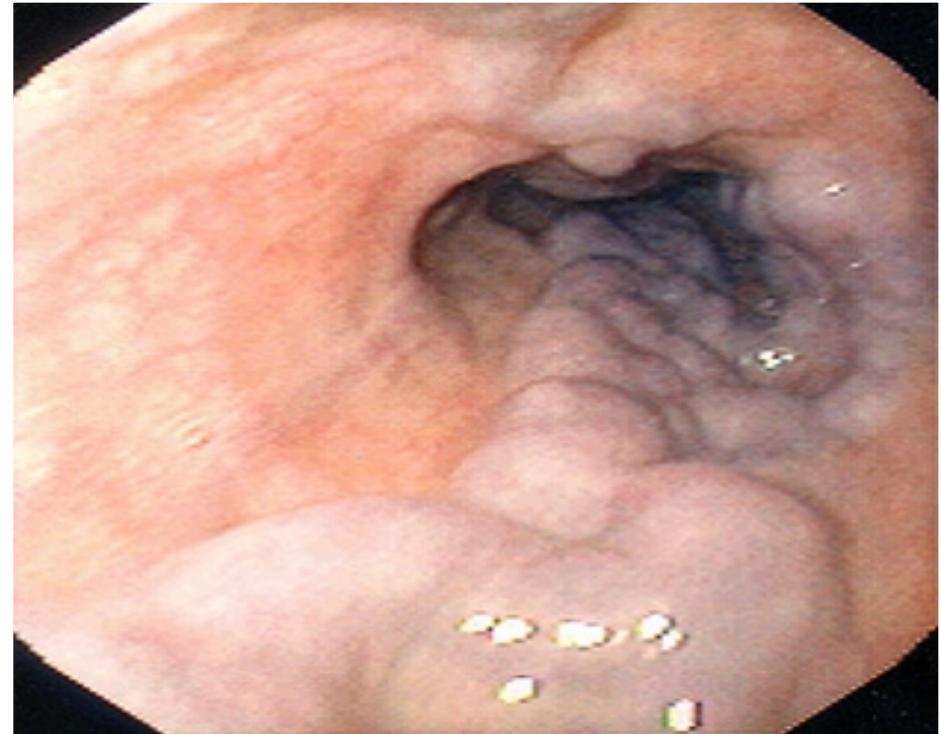
I Have
hiv

BOXER

JOE BOXER

JOE BOXER

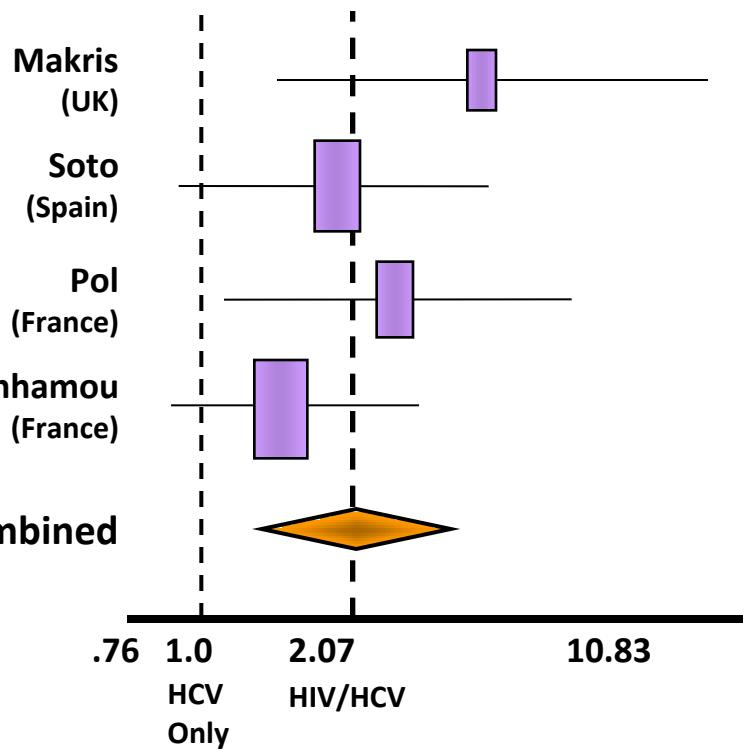
SLACKERS.CO.ZA



Increased risk of cirrhosis and ESLD due to HIV/HCV co-infection

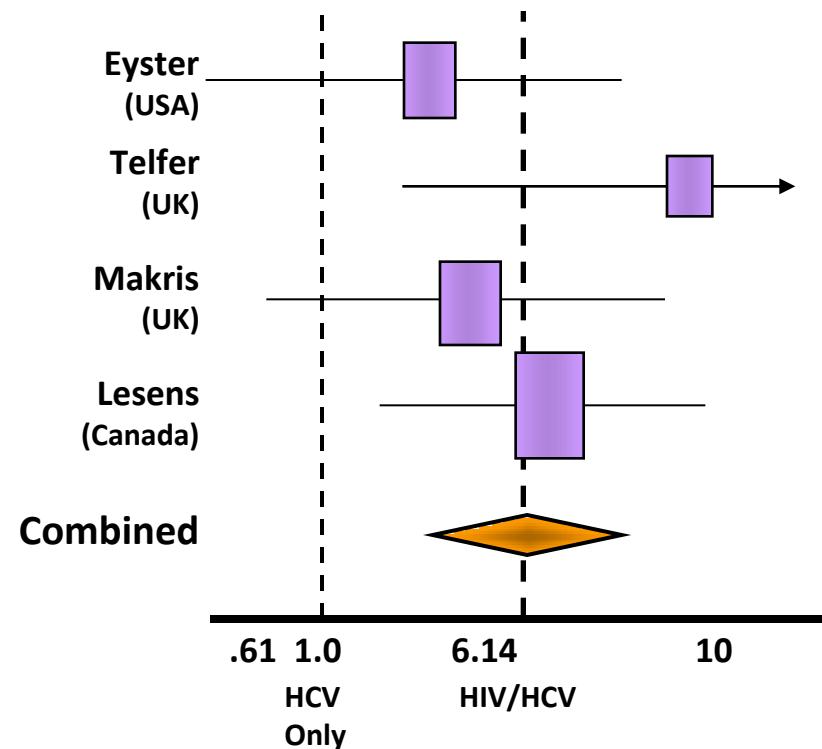
Histologic Cirrhosis

Relative Risk

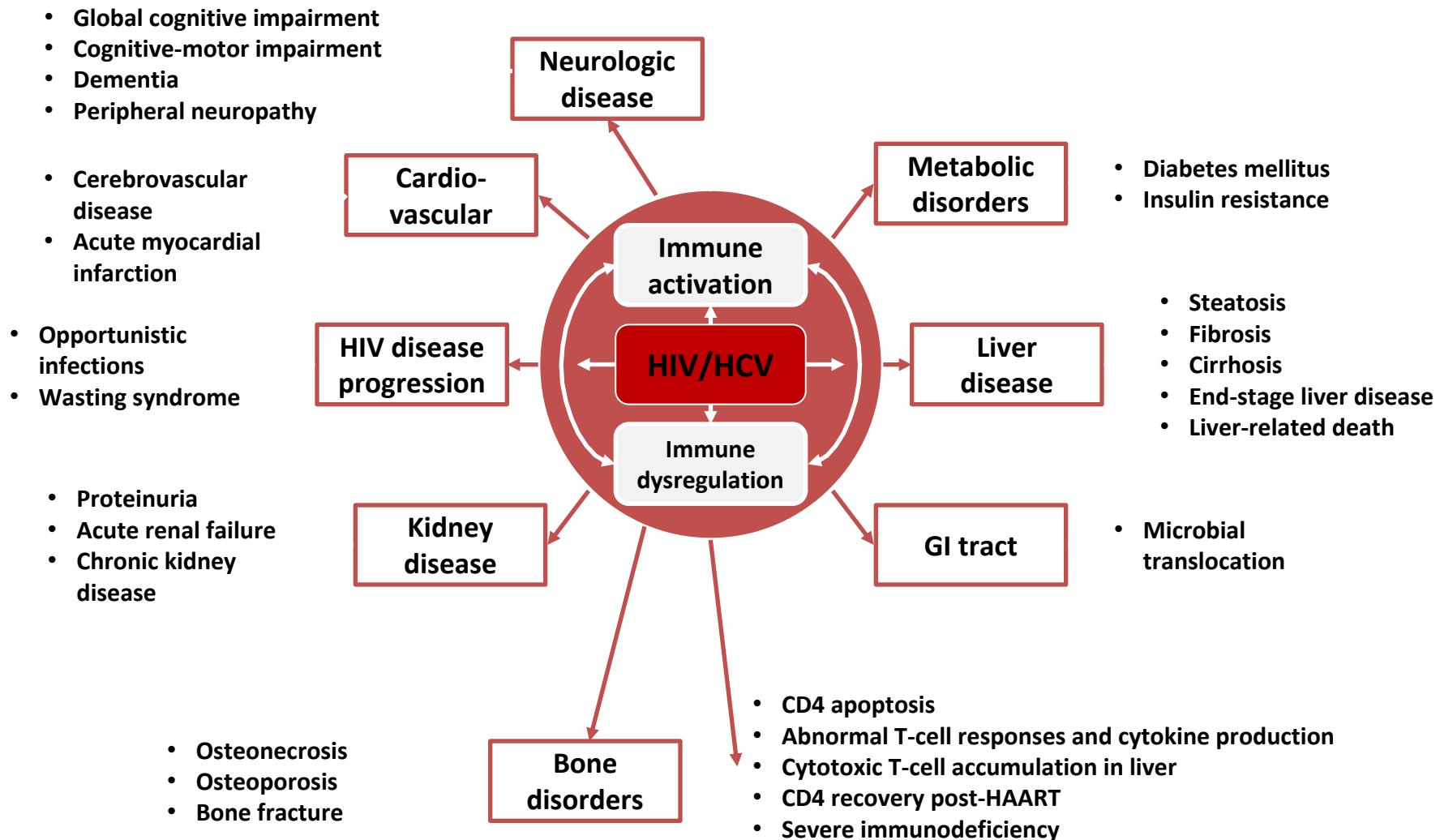


Decompensated Liver Disease

Relative Risk



HIV/HCV co-infection may result in multi-systemic disorders



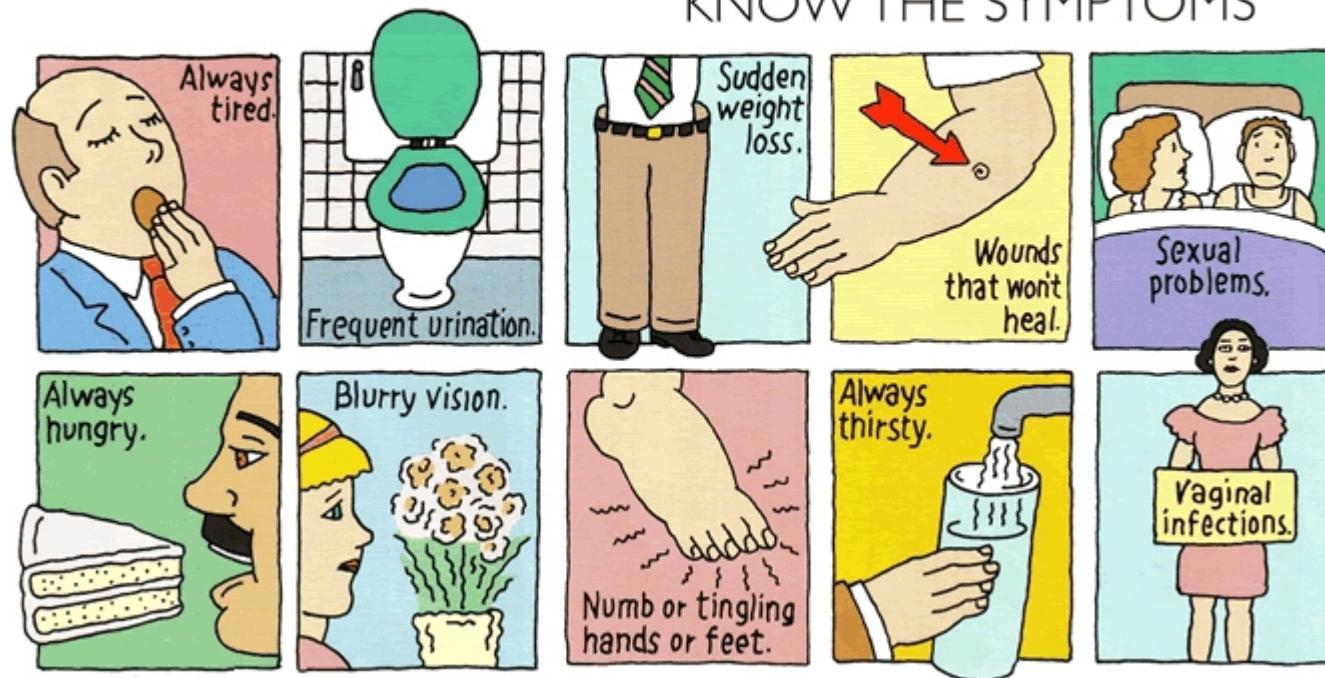


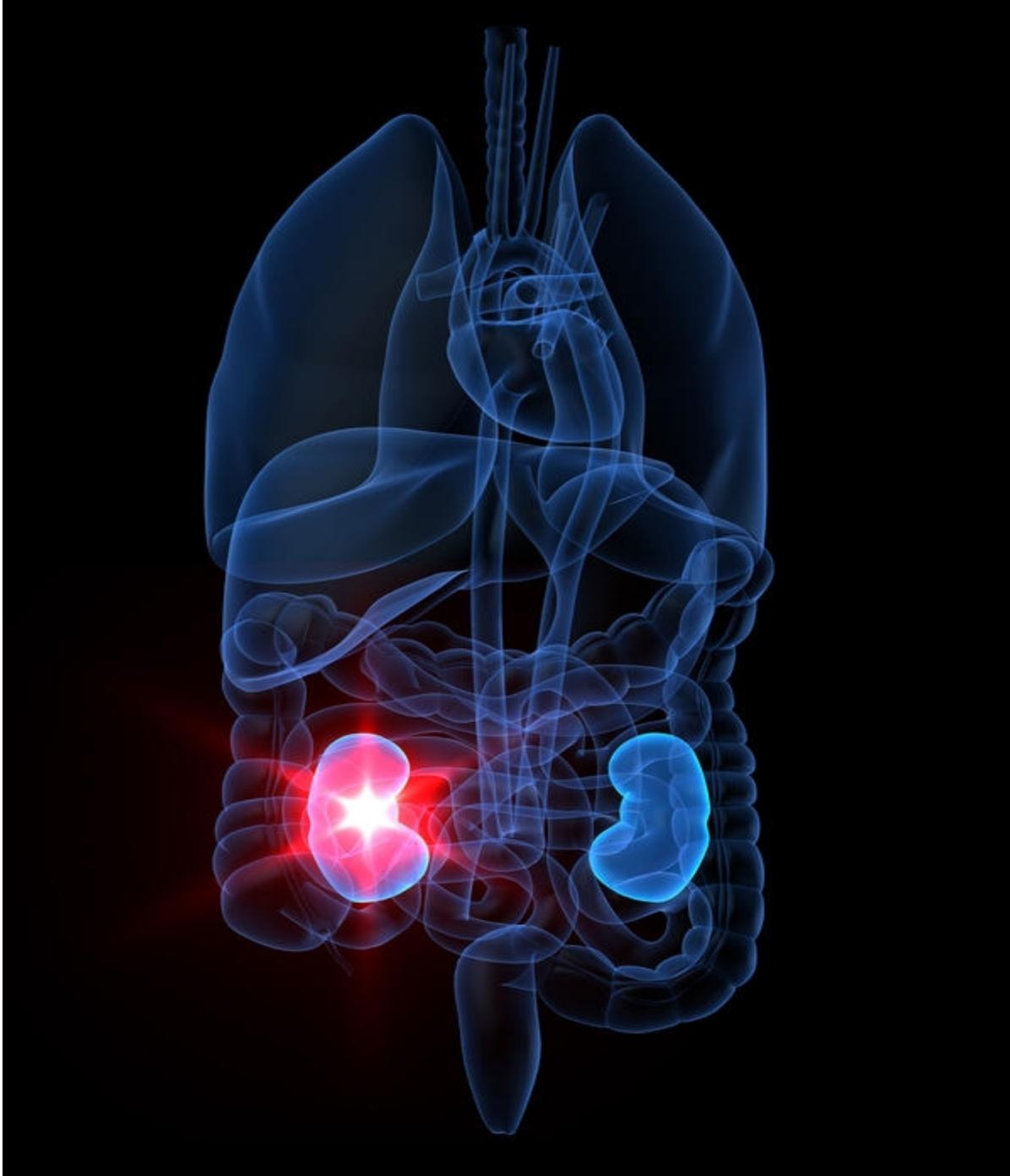
Top 12 Ways to Avoid a Heart Attack

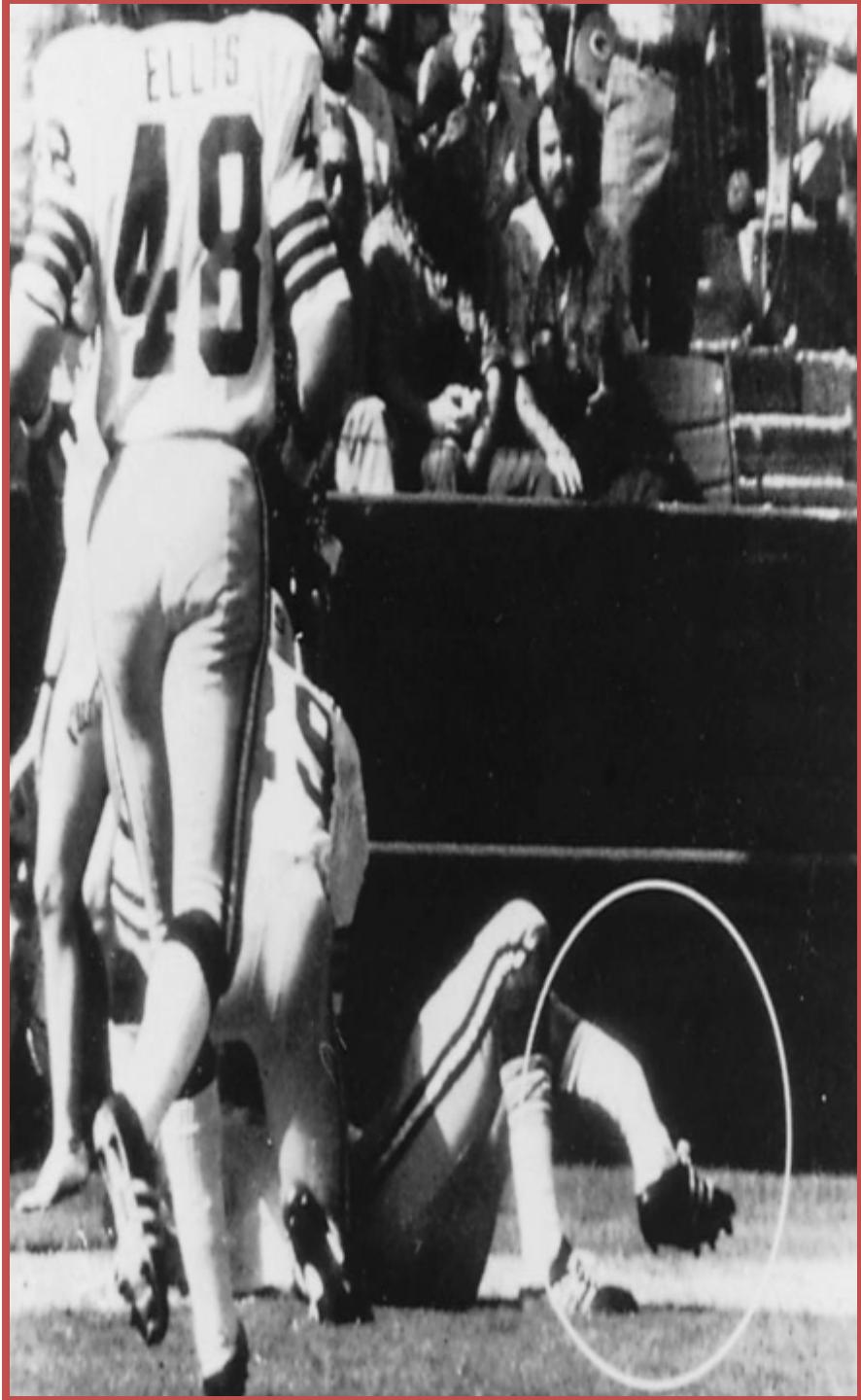
Defrim Kërçagu, MD

DIABETES

KNOW THE SYMPTOMS









©Vincent Desjardins 2009



Interaction between ARVs and drugs for HCV

| | Simeprevir | Sofosbuvir | Daclatasvir |
|-----------------|-------------------|-------------------|--------------------|
| ATV/r | No data | No data | DCV ↑* |
| DRV/r | SIM ↑; DRV ↔ | SOF ↑; DRV ↔ | No data |
| LPV/r | No data | No data | No data |
| EFV | SIM ↓; Efv ↔ | SOF ↔; Efv ↔ | DCV ↓* |
| RPV | SIM ↔; RPV ↔ | SOF ↔; RPV ↔ | No data |
| ETV | No data | No data | No data |
| RAL | SIM ↔; RAL ↔ | SOF ↔; RAL ↔ | No data |
| ELV/cobi | No data | No data | No data |
| DLG | No data | No data | No data |
| MVC | No data | No data | No data |
| TDF | SIM ↔; TFV ↔ | SOF ↔; TFV ↔ | DCV ↔; TFV ↔ |

* Decrease DCV dose to 30mg QD, Increase DCV dose to 90mg QD,

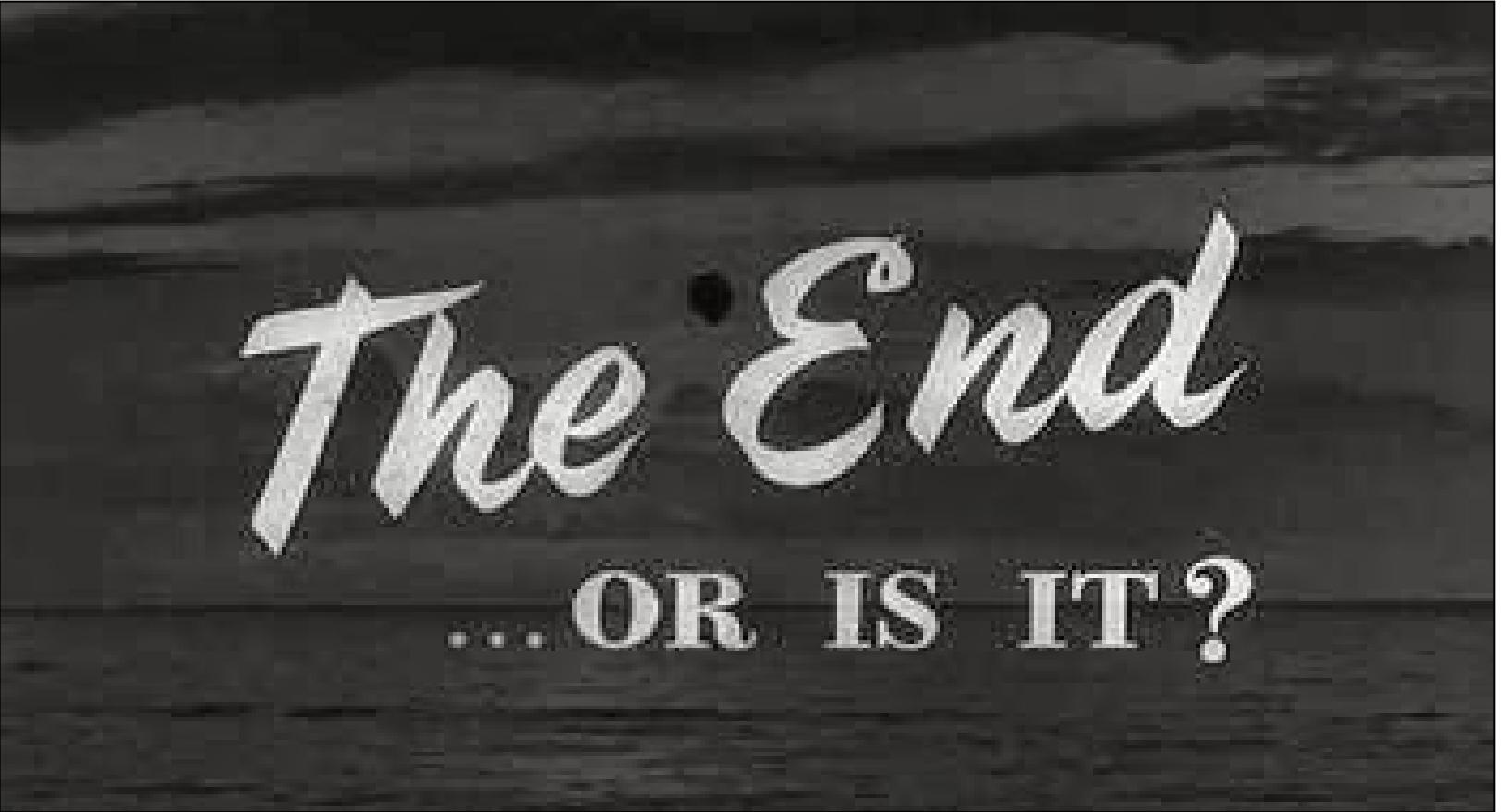
And.....
They Lived Happily
Ever After

The End





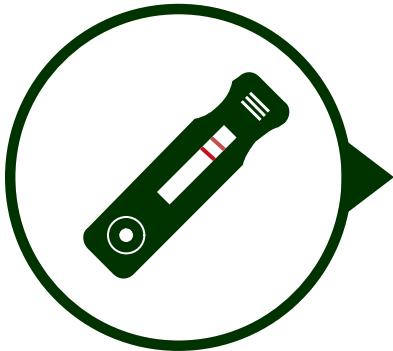
THE END



The End

....OR IS IT?

The HCV care cascade



**HCV
TESTING**



**ASSESS AND
MONITOR**



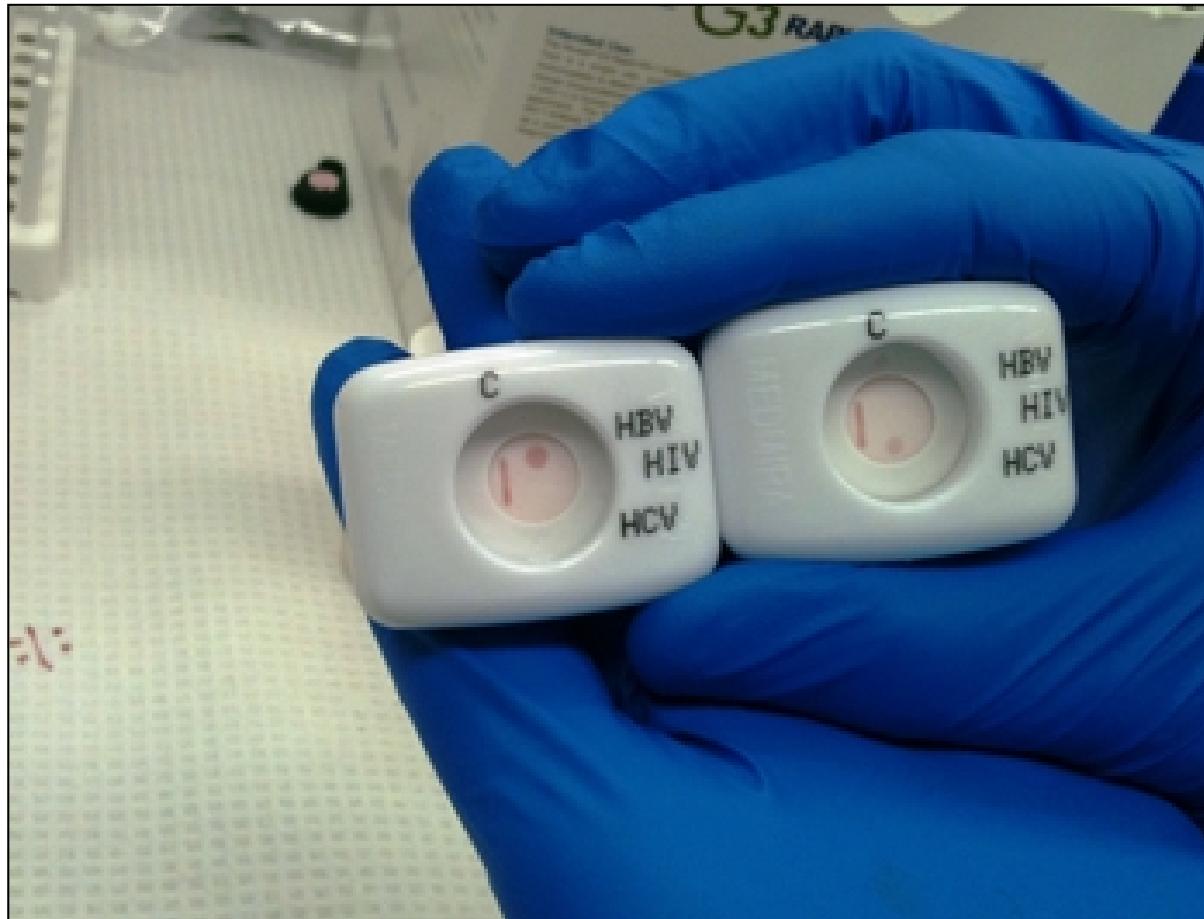
**ENGAGE IN
TREATMENT**



**ENHANCE
RESPONSE**

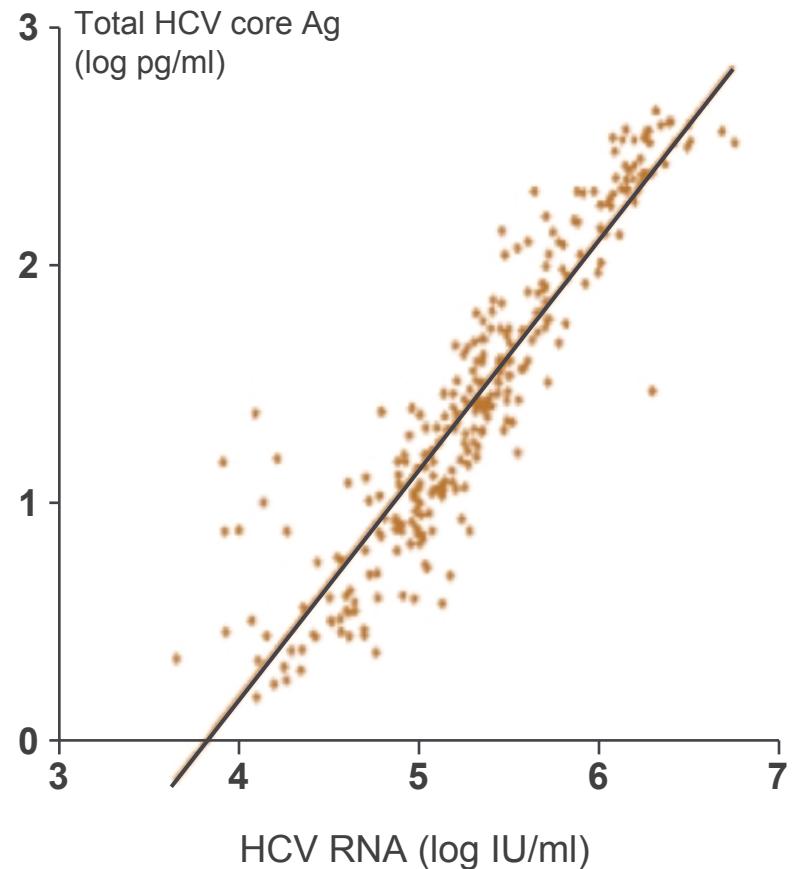


Have I got it?



Have I really got it?

Total HCV core antigen Correlation with HCV RNA





splashsauna
men's cruising spa





A perspective view of a hospital corridor. The ceiling is white with a grid of rectangular light fixtures. The floor is made of white square tiles. On both sides of the corridor, there are red doors with a white cross symbol. In the center of the ceiling, there is a large red sign with a black border that reads "Emergency". At the end of the corridor, there is a red double door with a white cross symbol. The overall style is clean and modern.

Emergency

A universal testing programme for blood borne viruses in an urban ED

Methods:

- Opt out BBV (HIV Ab, Hep BsAg, HCV Ab) screening as routine care
- Targets for uptake set for each month
- 5,299 patients were screened over 20 weeks and analysed

Results:

- Target of 50% was achieved

Number of diagnoses

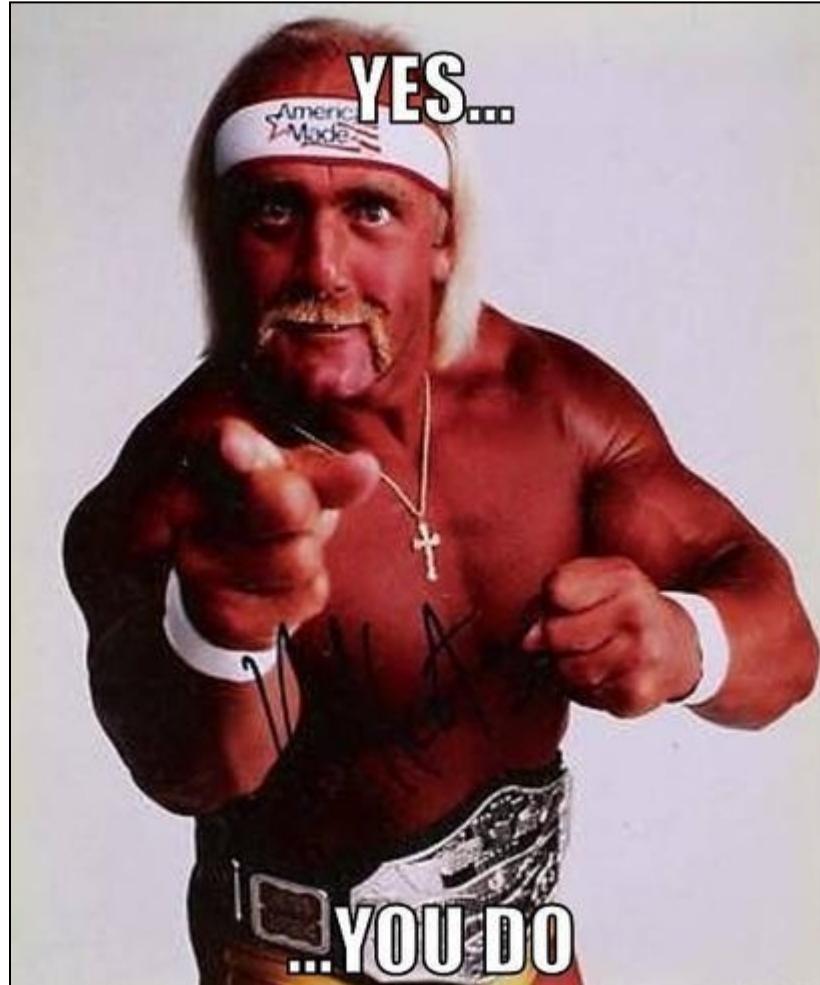
| Total | New diagnosis | Previously known | Prevalence rate of new diagnoses (per 1,000) |
|-------|---------------|------------------|--|
| HIV | 63 | 6 | 57 |
| HBV | 25 | 12 | 13 |
| HCV | 287 | 44 | 243 |

Linkage to care

Linkage to care subsequent to diagnosis
(new and previously known patients)

| | Known | New | Now linked |
|-----|-------|-----|------------|
| HIV | 57 | 6 | 62 (98.4%) |
| HBV | 13 | 12 | 24 (96%) |
| HCV | 243 | 44 | 227 (79%) |

Do I need treatment?



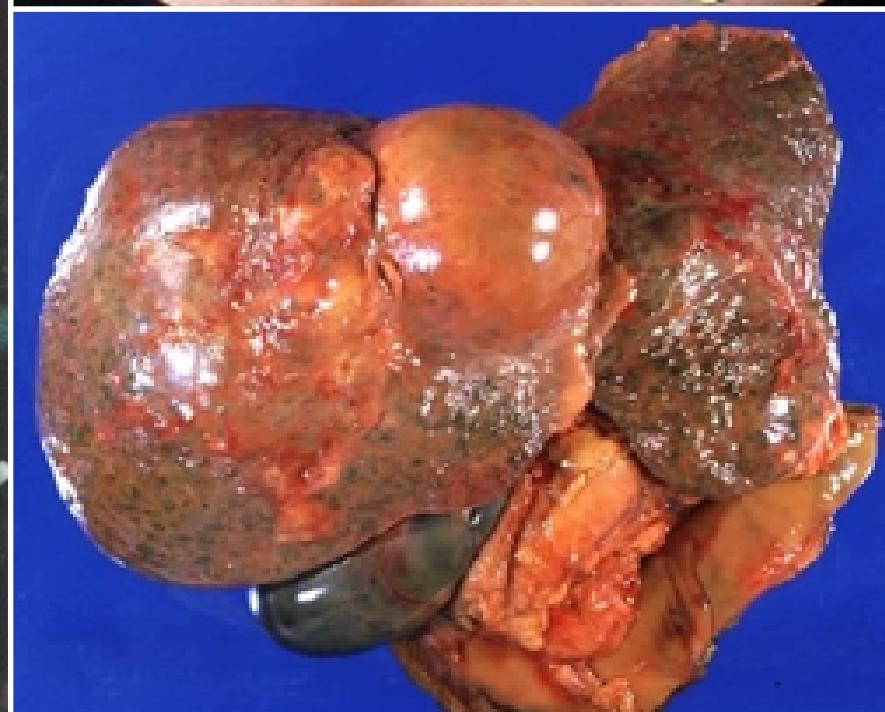
www.Design-Redefined.co.uk
Communicating Patient Engagement

Hepatitis C: breaking down the stigma



#DRmedia







INFLAMMATION

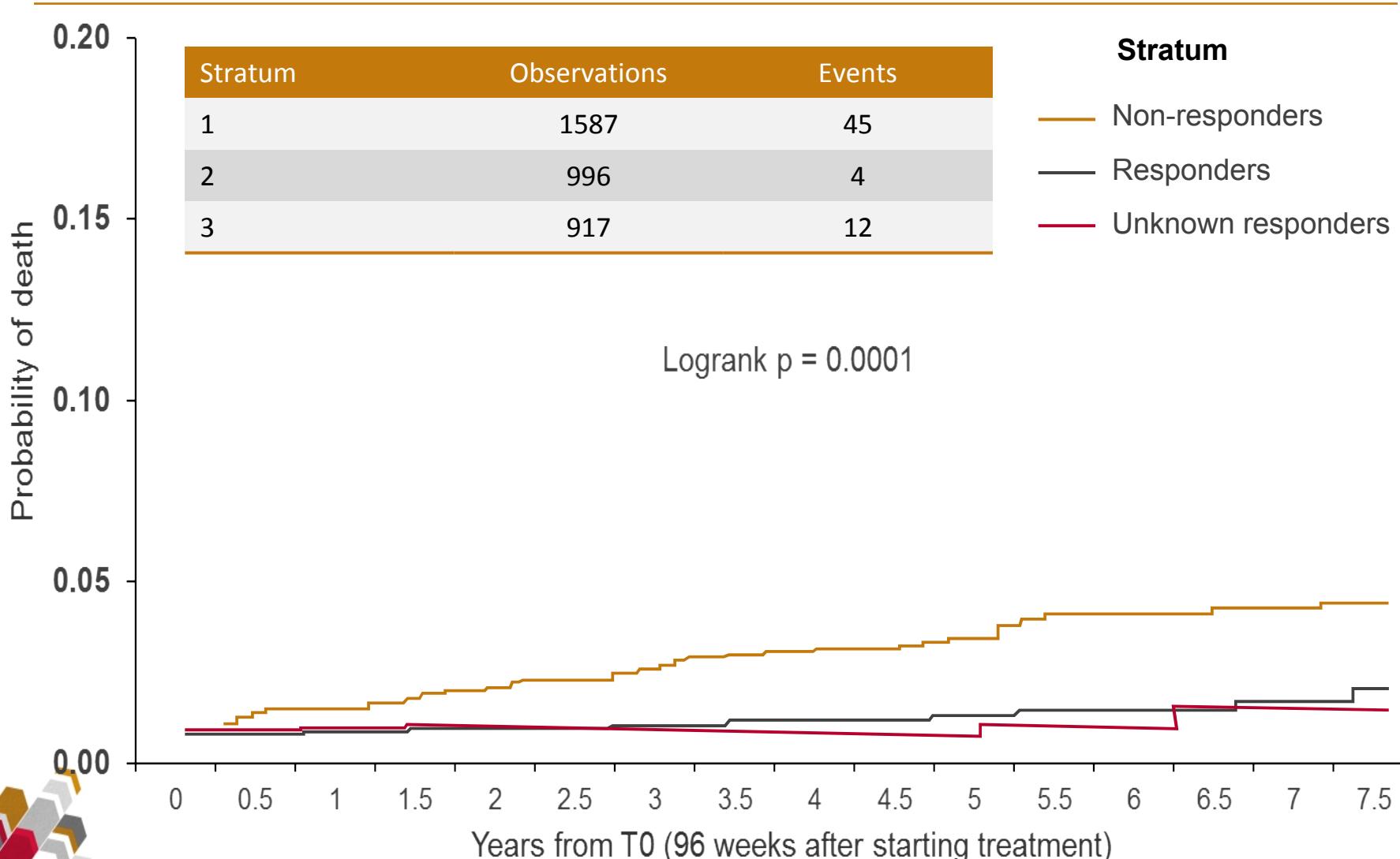
at the Root of Most Diseases



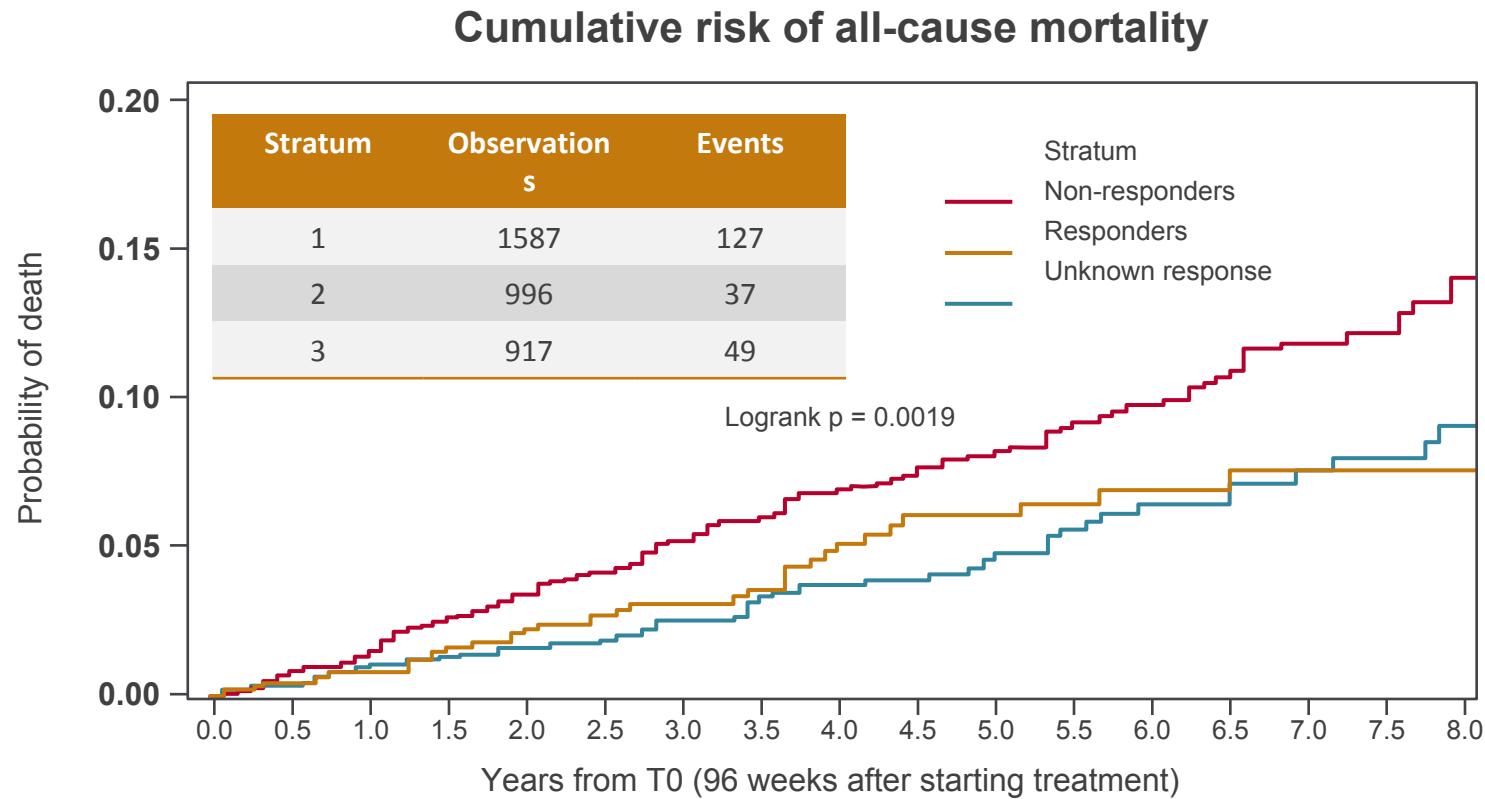
Dr. Axe

FOOD IS MEDICINE

Cumulative risk of liver-related death after HCV therapy (n=3,500)



Cumulative risk of all-cause mortality after HCV therapy (n=3,500)



| | | | | | | | | | |
|------------------|------|------|------|-----|-----|-----|-----|-----|-----|
| Non-responders | 1587 | 1428 | 1222 | 998 | 814 | 626 | 479 | 334 | 201 |
| Responders | 996 | 818 | 646 | 472 | 342 | 256 | 174 | 114 | 65 |
| Unknown response | 917 | 828 | 736 | 632 | 518 | 408 | 308 | 225 | 151 |

Is it working? Is it safe?

Current diagnostic tests used for monitoring of treatment for HCV

Diagnostic tests during DAA treatment: current system

| | Baseline | Week 4 | Week 12 | EDT | SVR12 | SVR24 |
|--------------------|----------|--------|---------|-----|-------|-------|
| Fibroscan | X | | | | | |
| Genotype | X | | | | | |
| IL2BB* | X | | | | | |
| AFP | X | | | | | |
| Pregnancy | X | X | X | X | X | X |
| HCV RNA PCR | X | X | X | X | X | X |
| Full blood Count | X | X | X | | | X |
| Clinical chemistry | X | X | X | | | X |

*IL-2BB testing for genotype 1 and 4 patients

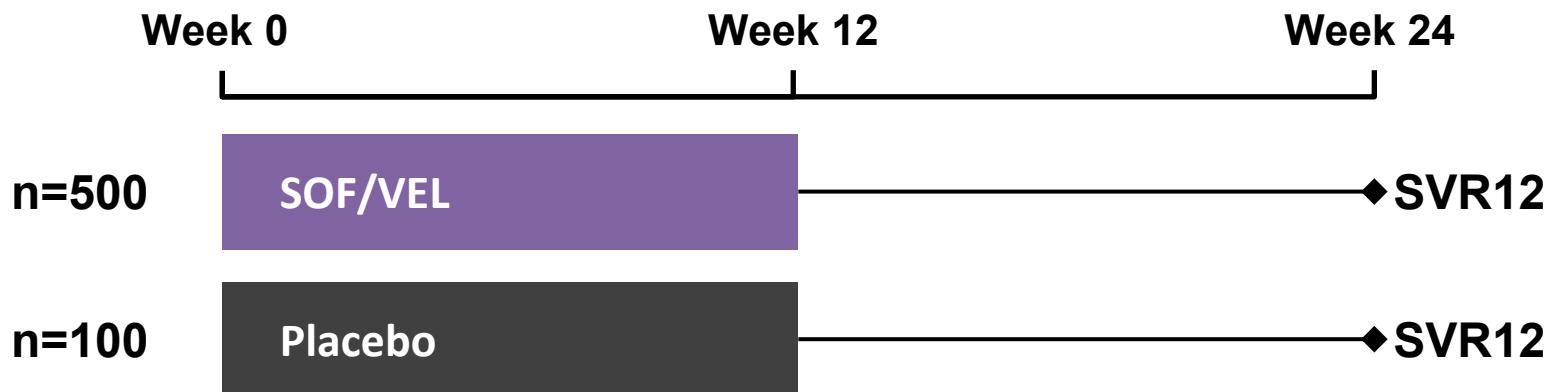
Diagnostic tests during DAA treatment: simplified system



Which treatment is right for me?

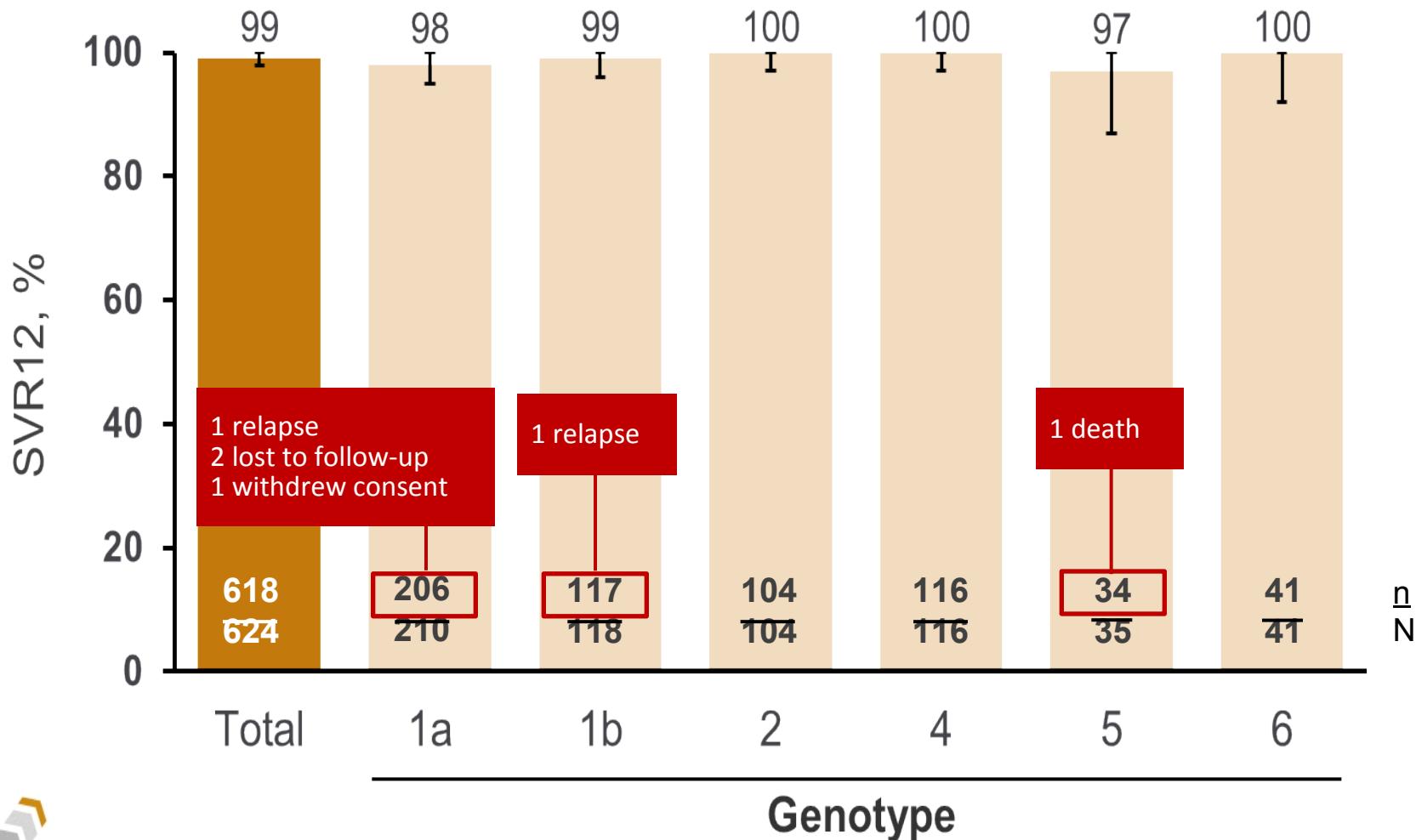


ASTRAL-1: Study design

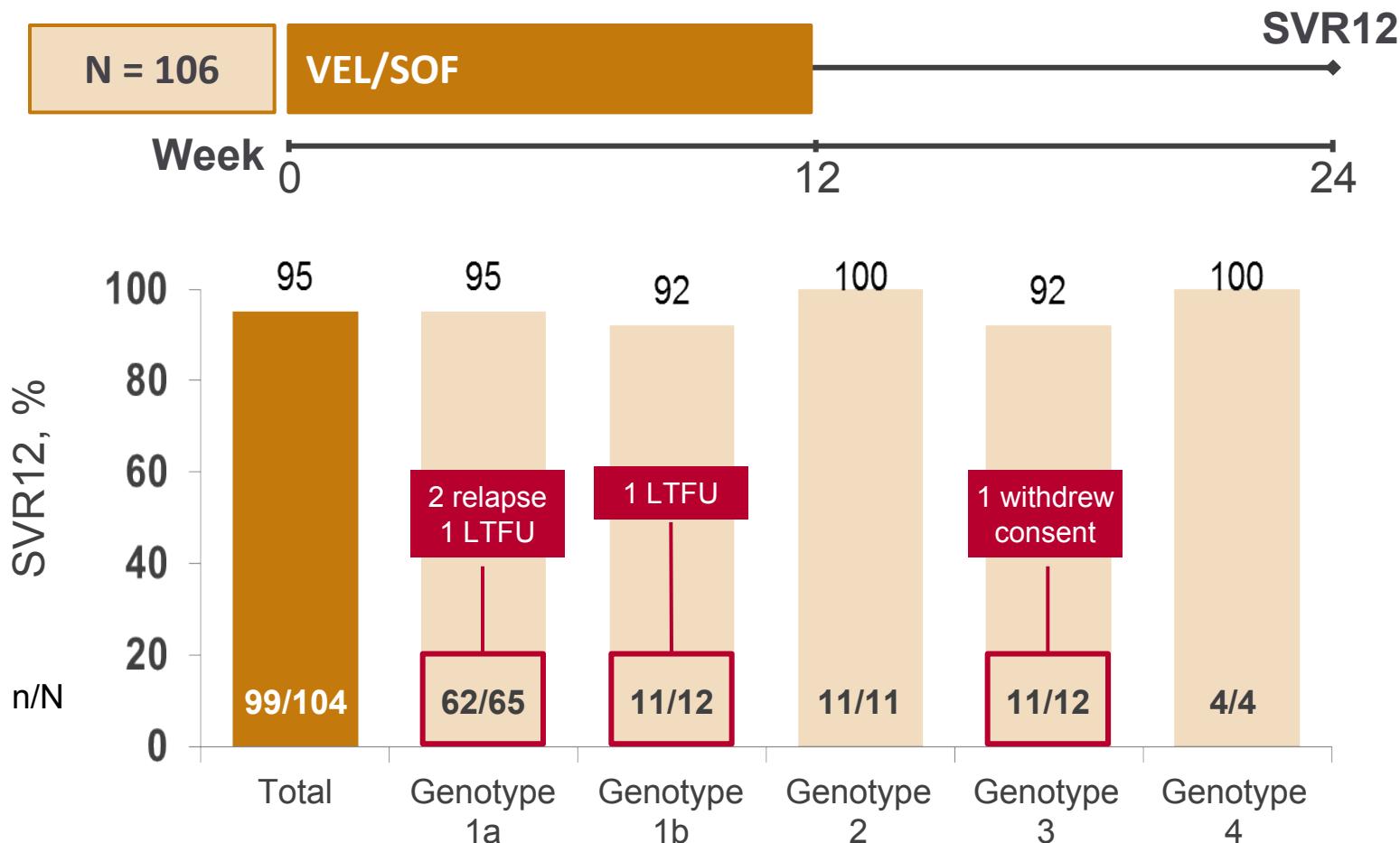


- Double blind, placebo controlled
- Broad inclusion criteria
- 5:1 randomization to SOF/VEL or placebo
 - Stratified by HCV genotype and cirrhosis (presence/absence)
 - Genotype 5 patients not randomized
- Conducted at 81 sites in US, Canada, UK, Germany, France, Italy, Belgium, and Hong Kong

ASTRAL-1: SVR12 by HCV genotype



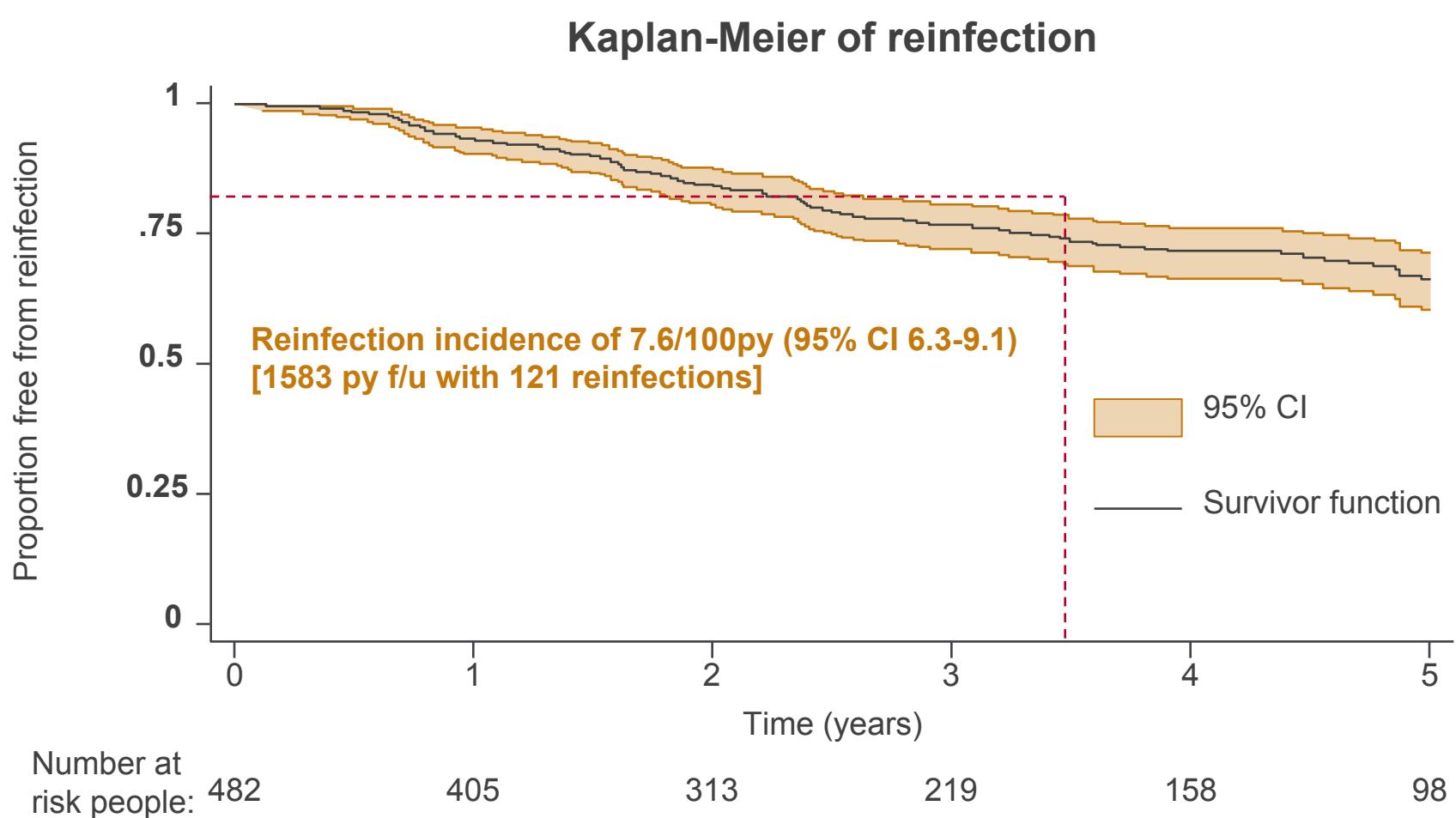
ASTRAL-5: VEL/SOF FDC for 12 weeks in patients co-infected with HCV and HIV-1



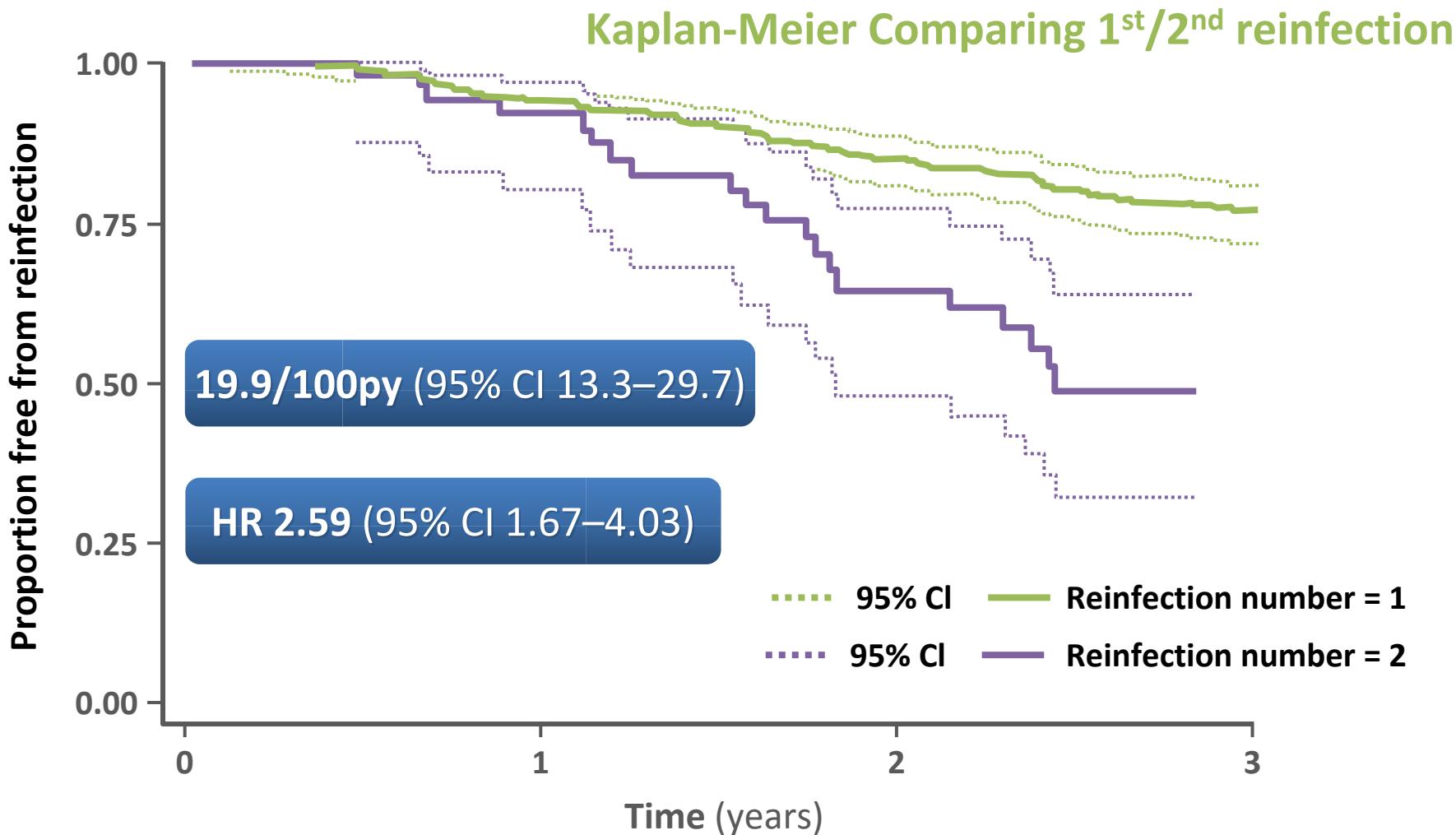
HCV is an
easy-to-cure virus



HCV reinfection incidence



Comparing 1st/2nd reinfection incidence



Number at risk

| | | | | |
|---------------|-----|-----|-----|-----|
| Reinfection 1 | 482 | 405 | 313 | 219 |
| Reinfection 2 | 56 | 40 | 24 | 12 |

Adapted from: Ingiliz P, et al. 51st Annual Meeting of the European Association for the Study of the Liver. Barcelona, Spain ,16 April 2016.

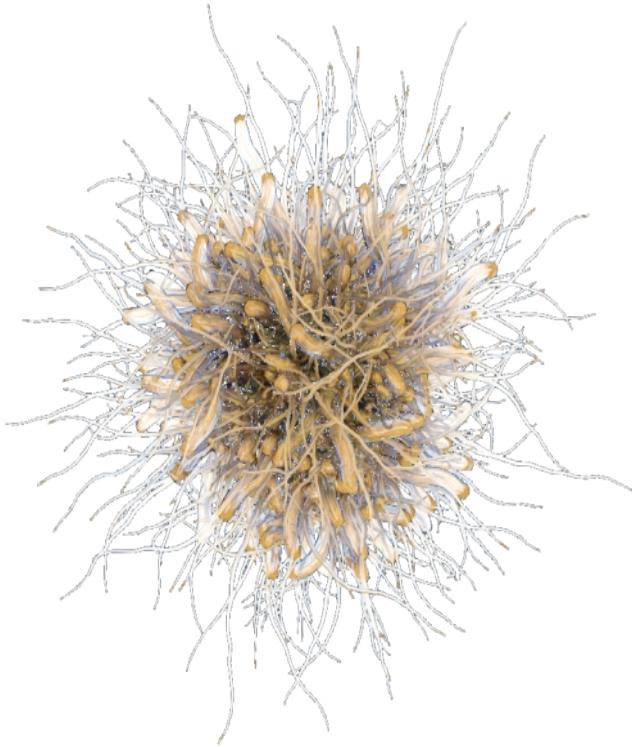
| Episode | Genotype | Treatment | Outcome |
|---------|----------|-------------|------------------|
| 1 | 1 | PEG/RBV | ETR |
| 2 | 4 | PEGRBV | SVR |
| 3 | 1 | NIL | Clearance |
| 4 | 1 | NIL | Clearance (?) |
| 5 | 4 | PEG/RBV | SVR |
| 6 | 3 | PEG/RBV | SVR |
| 7 | 1 | PEG/RBV | Null Response(?) |
| 8 | 1 | PEG/RBV/PI | SVR |
| 9 | 1 | PEG/RBV/TPV | SVR |

XXXX

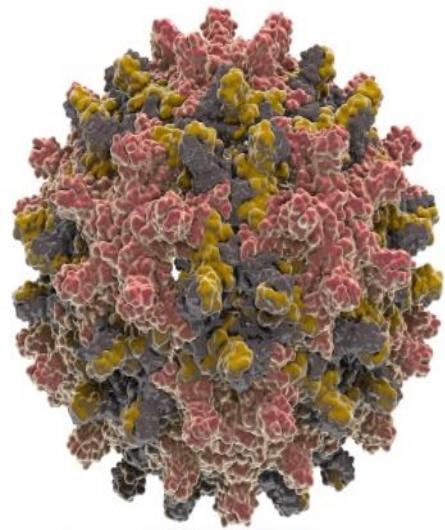


... and, they lived
happily ever after

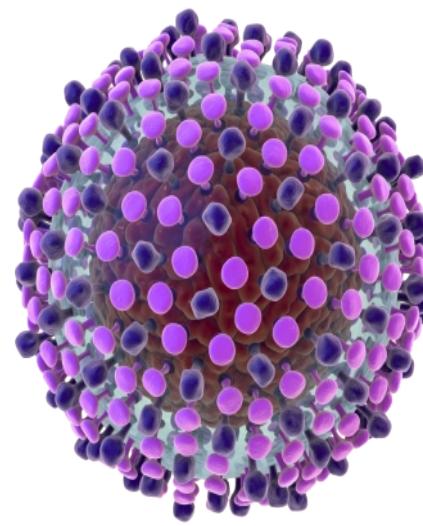
HIV



HBV

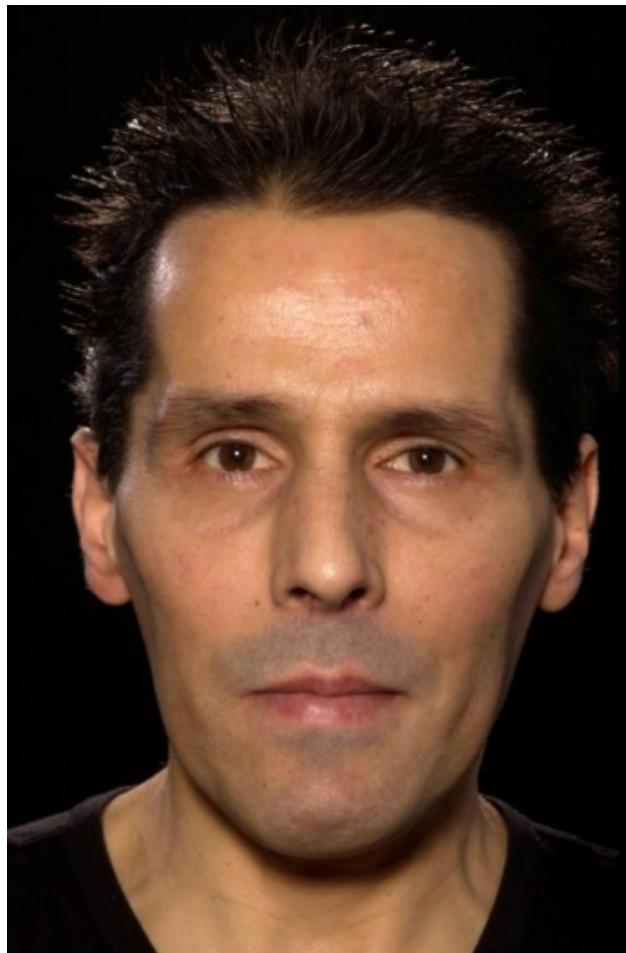


HCV

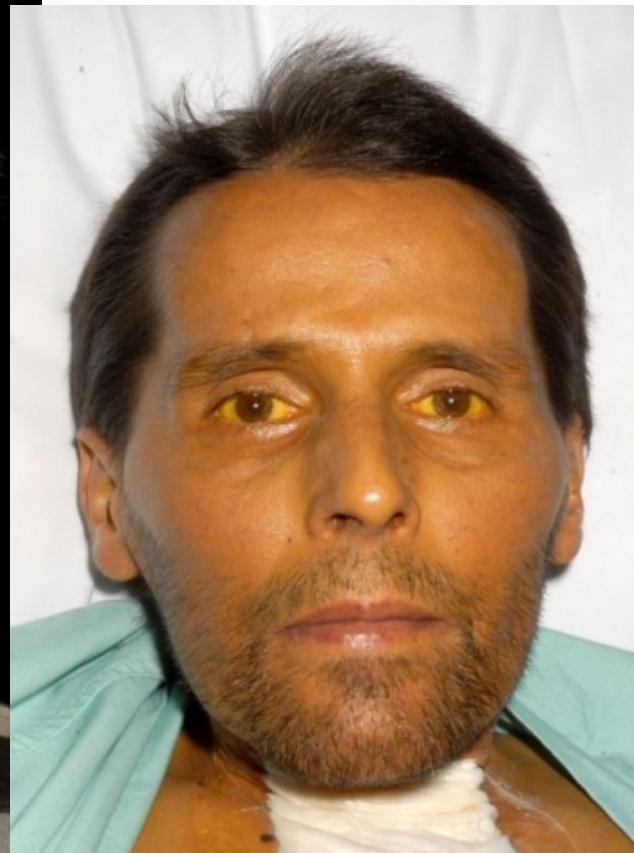
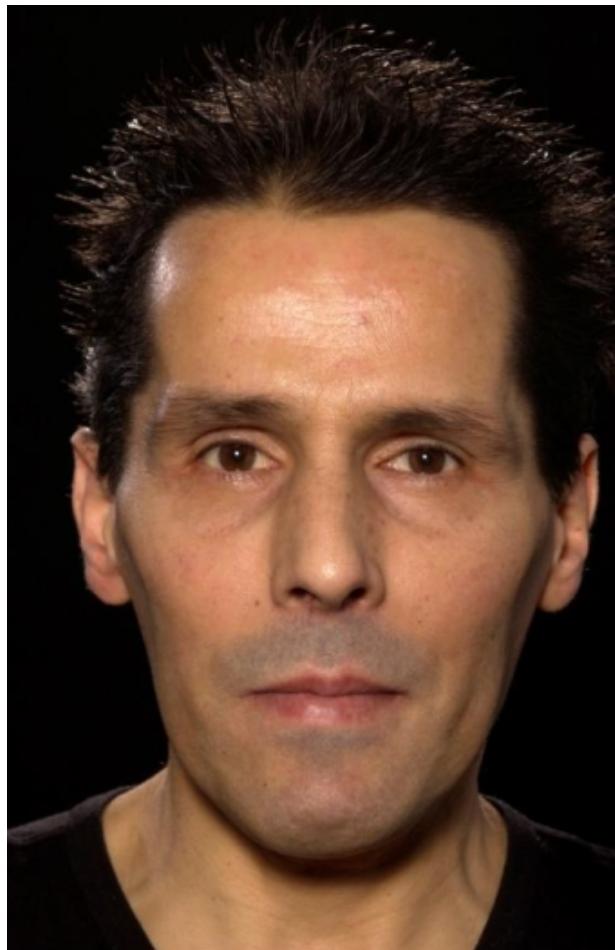


















**Actions
speak
louder
than
words.**

SusanSpira.com