

# Dr Thomas Martin

Chelsea and Westminster Hospital, London

# Hepatitis C virus reinfection among HIV positive men who have sex with men

TCS Martin

# HIV/HCV Coinfection

- Liver disease is the leading non-AIDS cause of death in HIV infected individuals (14.5%)<sup>1</sup>
- Hepatitis C virus (HCV) accounts for approximately two-thirds of liver disease in HIV infected individuals
- Coinfection with HIV leads to:
  - Reduced HCV spontaneous clearance rates of 20%
  - Increase in HCV related progression to cirrhosis by 2-3 fold<sup>2</sup>
  - Reduction in HCV treatment success

1. Group DAD. Liver-Related Deaths in Persons Infected With the Human Immunodeficiency Virus: The D:A:D Study. Arch Intern Med. 2006;166(15):1632-41

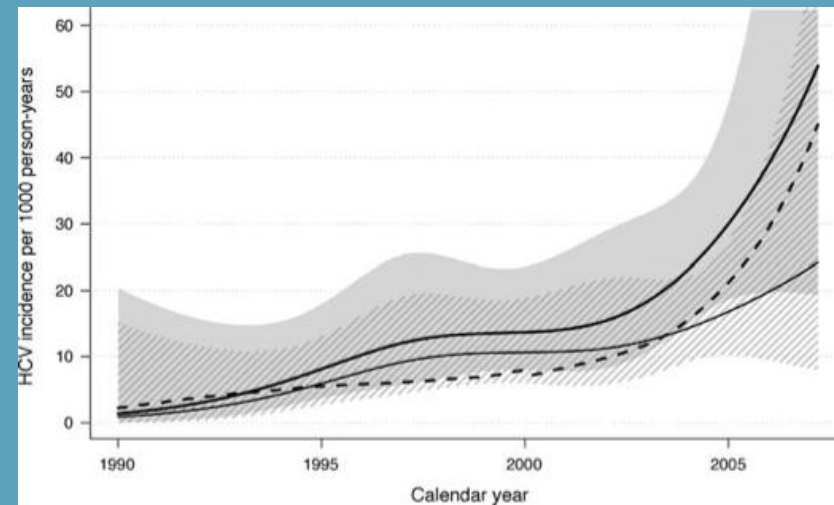
2. Thein HH, et al. Natural history of hepatitis C virus infection in HIV-infected individuals and the impact of HIV in the era of highly active antiretroviral therapy: a meta-analysis. AIDS. 2008;22(15):1979-1991.

# HCV among HIV infected MSM

- Epidemic of sexually transmitted HCV occurring among the HIV infected men who have sex with men (MSM) population since early 2000s
- Transmission associated with high-risk sexual practices, ulcerating genital lesions and recreational drug use
- Reinfection with HCV following clearance has been documented although contribution to the epidemic is unknown<sup>1</sup>

## The hepatitis C epidemic among HIV-positive MSM: incidence estimates from 1990 to 2007

Jannie J. van der Helm<sup>a</sup>, Maria Prins<sup>a,b</sup>, Julia del Amo<sup>c</sup>,  
Heiner C. Bucher<sup>d</sup>, Geneviève Chêne<sup>e</sup>, Maria Dorrucchi<sup>f</sup>, John Gill<sup>g</sup>,  
Osamah Hamouda<sup>h</sup>, Mette Sannes<sup>i</sup>, Kholoud Porter<sup>j</sup>,  
Ronald B. Geskus<sup>a,k</sup>, on behalf of the CASCADE Collaboration



1. Lambers FAE, Prins M, Thomas X, Molenkamp R, Kwa D, Brinkman K, van der Meer JTM, and Schinkel J. Alarming incidence of hepatitis C virus reinfection after treatment of sexually acquired acute HCV infection in HIV-infected men having sex with men in Amsterdam. *AIDS* 2011; 13;25(17):F21-7

# Aim

1. Calculate HCV reinfection incidence among HIV infected MSM in London
2. Compare reinfection incidence between individuals who were either previously treated or spontaneously cleared their primary infection
3. Describe spontaneous clearance rates and sustained viral response (SVR) rates of HCV reinfection

# Study Design

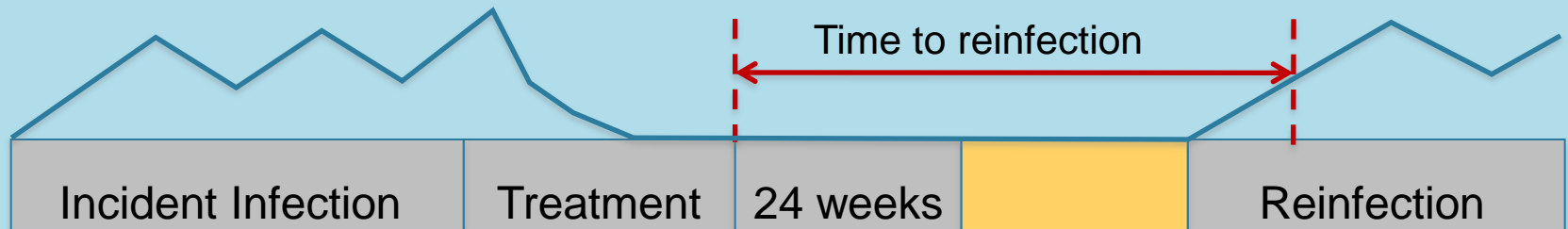
- Retrospective analysis of all HIV/HCV coinfecting individuals between 2004-2012 at Chelsea and Westminster Hospital
- Inclusion:
  - HIV infected MSM
  - No reported history of injecting drug use
  - Achieved HCV infection SVR through treatment or spontaneous clearance with at least one subsequent HCV PCR result

# Definitions

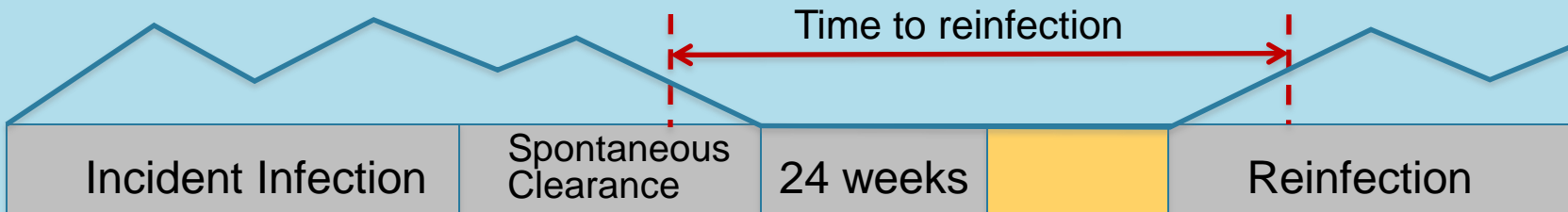
## Reinfection

- Any newly positive HCV RNA PCR 24 weeks or more following end of treatment or clearance of the virus; or
- Newly positive HCV RNA PCR within 24 weeks of end of treatment or clearance if reinfected with a different genotype

## Following treatment



## Following spontaneously clearance



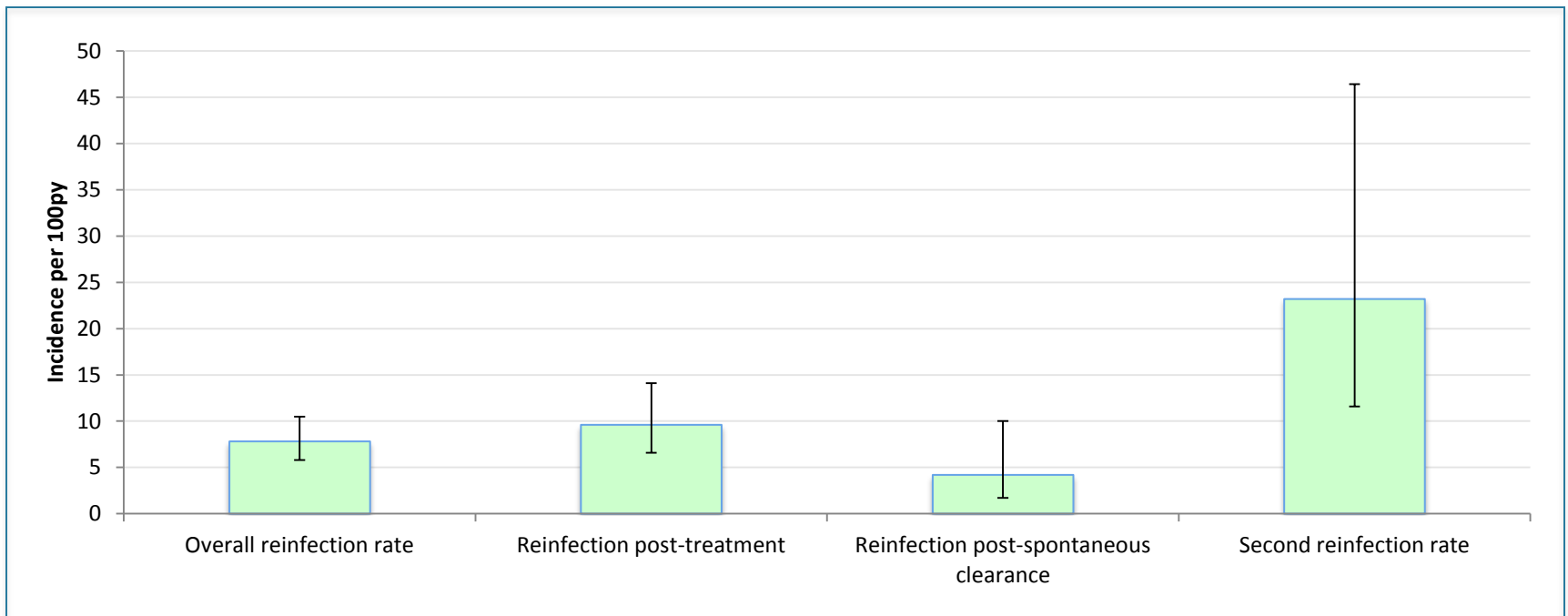
# Study characteristics

	All incident infections	Primary infection	Treated HCV Infection		Spontaneously cleared HCV infection	
			Non-reinfected	Reinfected	Non-reinfected	Reinfected
<b>Incident infection</b>						
Total	191	145	87	27	26	5
Median age (IQR)			41 (38-47)	41 (37-43)	39 (34-43)	36 (35-42)
<b>Follow-up</b>						
Median testing interval, days (IQR)		112 (62-224)	106 (62-210)	99 (55-161)	189 (89-343)	99 (63-247)
cART use during follow-up (%)		129 (89)	82 (94)	22 (81)	21 (81)	4 (80)
Median peak ALT during follow up (IQR)			38 (26-55)	254 (140-892)	58 (35-125)	226 (168-499)
Median CD4 at last negative HCV RNA PCR/first positive HCV RNA (IQR)			547 (444-681)	429 (379-624)	531 (392-687)	397 (280-710)

P<0.0001

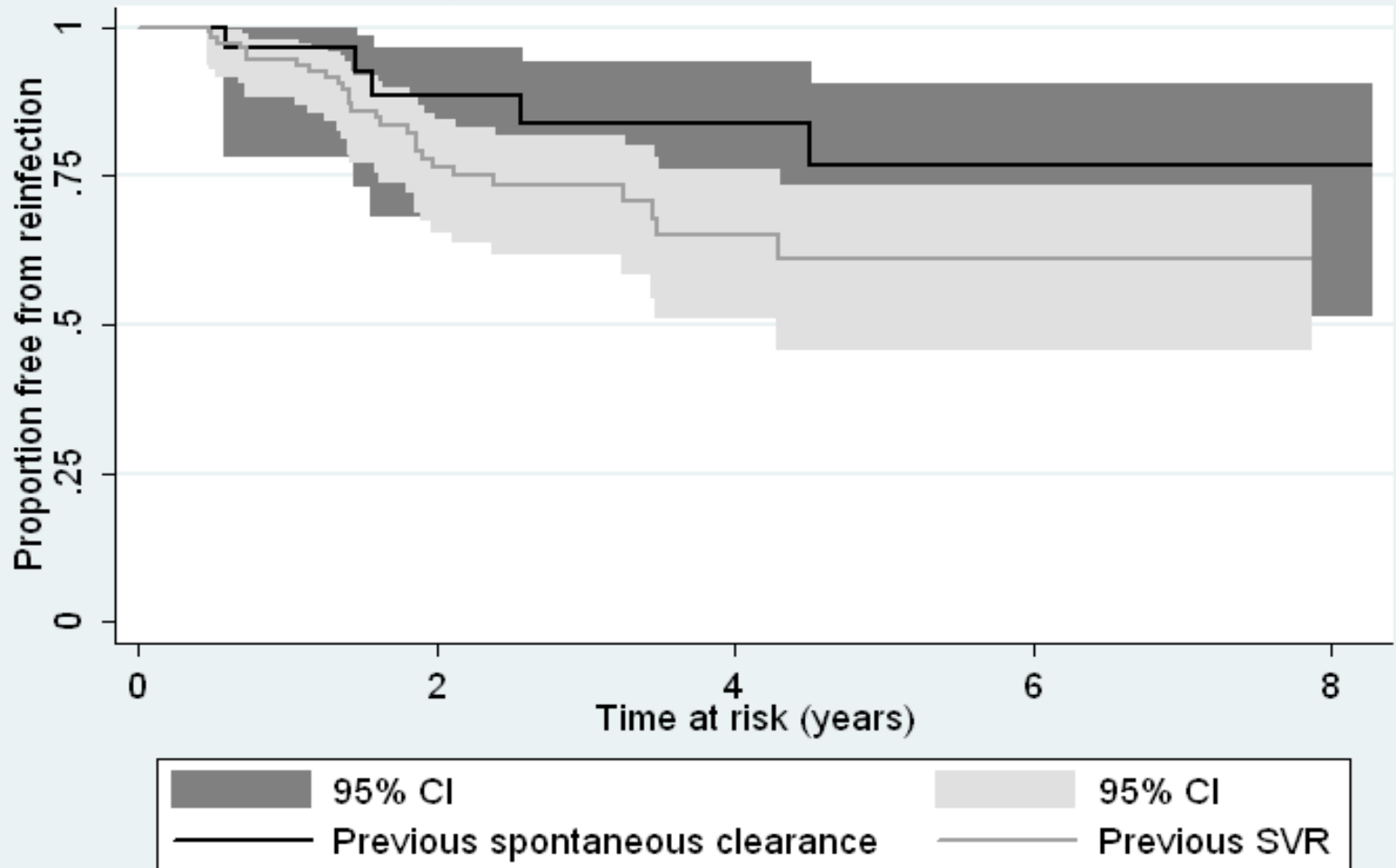


# Reinfection Incidence



- Overall reinfection rate 7.8/100py (95% CI 5.8-10.5/100py)
- Post-treatment 8.0/100py vs. post-spontaneous clearance 4.2/100py (p=0.15)
- Second reinfection rate 23.2/100py

# Kaplan-Meier survival estimates



# HCV reinfection outcomes

- Total of 54 reinfections
- 20% spontaneous clearance rate
- Treatment outcome with pegylated-interferon/Ribavirin
  - Genotype 1/4: 73% SVR (N=22)
  - Genotype 2/3: 100% SVR (N=2)

# Limitations

- Retrospective study
- No phylogenetic analysis performed to confirm true reinfection
- Variable testing intervals with potential to affect results

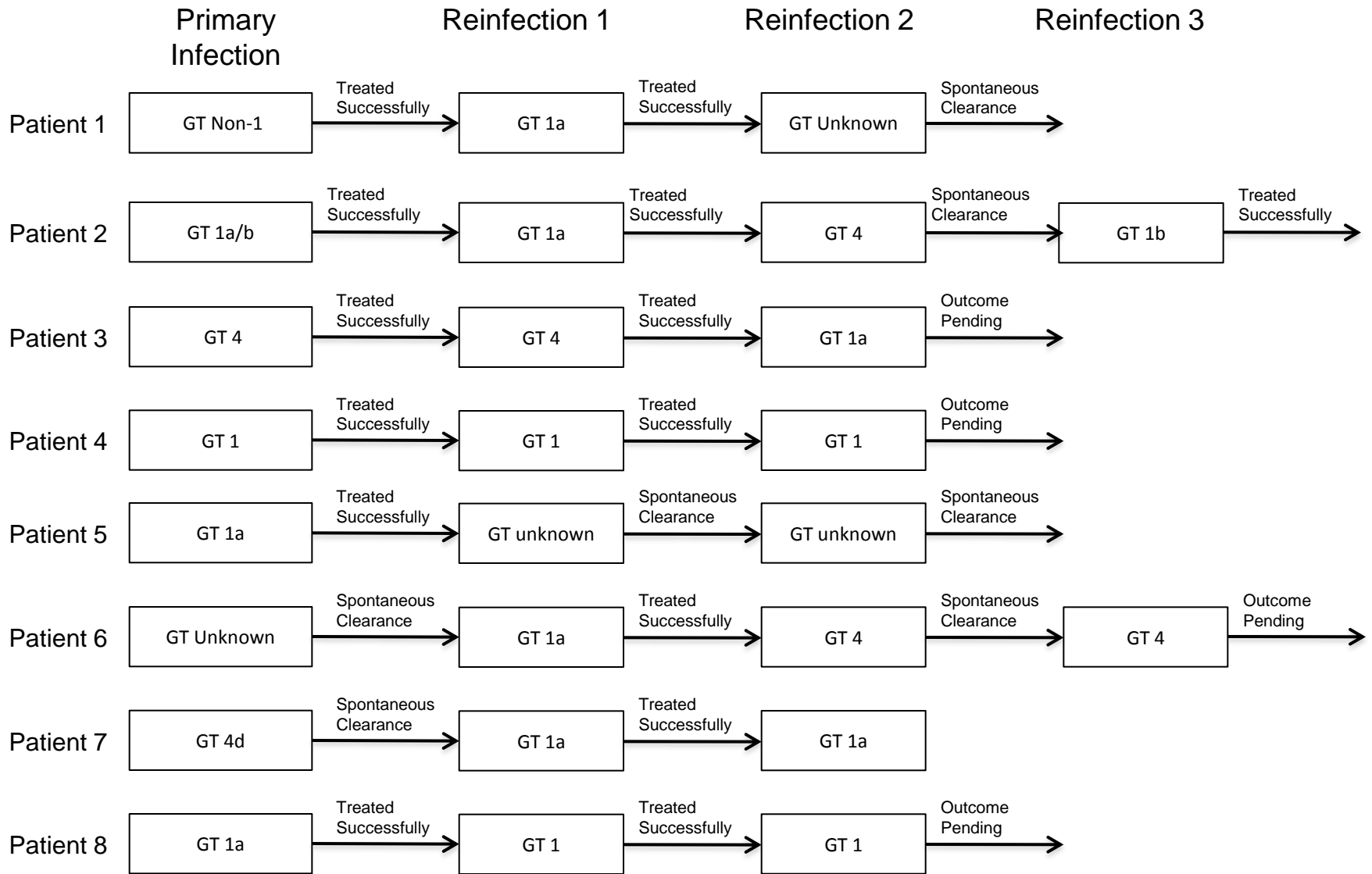
# Conclusion

- High rates of HCV reinfection among HIV infected MSM (7.8/100py)
  - Targeted sexual education for MSM who contract HCV infection
  - Enhanced surveillance of individuals who have previously been infected with HCV
  - Implications for cost efficacy of treatment
- Weak evidence for protective immunity following spontaneous clearance ( $p=0.15$ )
- Spontaneous clearance rate (20%) supports initial monitoring before treatment of reinfection

# Thank you

- Co-authors: NK Martin<sup>2,3</sup>, M Hickman<sup>2</sup>, P Vickerman<sup>3</sup>, EE Page<sup>1</sup>, R Everett<sup>1</sup>, BG Gazzard<sup>1</sup>, M Nelson<sup>1</sup>
  1. Chelsea and Westminster Hospital
  2. School of Social and Community Medicine, University of Bristol
  3. Department of Global Health and Development, London School of Hygiene and Tropical Medicine
- St Stephen's AIDS Trust for financial support

	All incident infections	Primary infection	Treated HCV Infection		Spontaneously cleared HCV infection	
			Non-reinfected	Reinfected	Non-reinfected	Reinfected
<b>Baseline infection</b>						
Total	191	145	87	27	26	5
Median age (IQR)			41 (38-47)	41 (37-43)	39 (34-43)	36 (35-42)
Incident Genotype						
1		97	67 (77)	22 (82)	7 (27)	1 (20)
2		1	1 (1)	0 (0)	0 (0)	0 (0)
3		6	5 (6)	0 (0)	1 (4)	0 (0)
4		18	13 (15)	4 (15)	0 (0)	1 (20)
UNK		23	1 (1)	1 (1)	18 (69)	3 (60)
Median peak ALT of incident infection (IQR)			476 (251-1014)	414 (216-832)	359 (145-755)	95 (54-327)
<b>Follow-up</b>						
Reinfection rate per 100py (95% CI)	7.8 (5.8-10.5)	8.0 (5.7-11.3)		9.6 (6.6-14.1)		4.2 (1.7-10.0)
Second reinfection rate per 100py (95% CI)	15.5 (7.7-31.0)	23.2 (11.6-46.4)				
Median testing interval, days (IQR)		112 (62-224)	106 (62-210)	99 (55-161)	189 (89-343)	99 (63-247)
cART use during follow-up (%)		129 (89)	82 (94)	22 (81)	21 (81)	4 (80)
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Median CD4 at last negative HCV RNA PCR/first positive HCV RNA (IQR)			547 (444-681)	429 (379-624)	531 (392-687)	397 (280-710)
Reinfection genotype (%)						
1		22 (69)		19 (70)		3 (60)
2		0 (0)		0 (0)		0
3		1 (3)		1 (4)		0
4		2 (6)		1 (4)		1 (20)
UNK		7 (22)		6 (22)		1 (20)





191 incident HCV infections

145 primary infections (negative HCV antibody prior to infection)

46 with uncertain incident infection details

114 patients successfully treated for their primary infection

31 patients spontaneously clear their primary infection

Either spontaneously clear or successfully treated

27 reinfections

4 failed treatment  
10 SVR pending

13 reach SVR  
11 successfully treated  
2 spontaneous clearances

6 reinfections

3 pending treatment outcome

3 spontaneous clearances

1 reinfection  
(Treated successfully)

5 reinfections

1 SVR pending

4 reach SVR  
2 treated successfully  
2 spontaneous clearances

2 reinfections

1 developed chronic HCV infection

1 spontaneous clearance

1 reinfection  
(SVR pending)

12 reinfections

2 failed treatment  
2 SVR pending  
1 not treated

7 reach SVR  
4 successfully treated  
3 spontaneous clearances

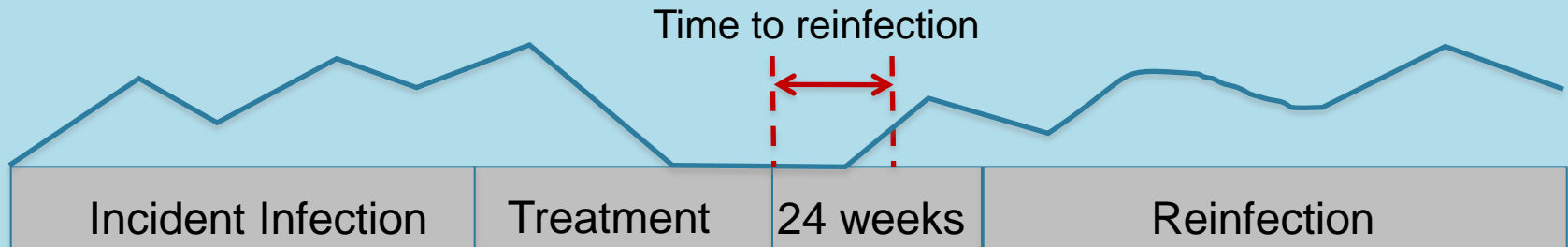
# Definitions

- Reinfection:
  - Any newly positive HCV RNA PCR 24 weeks or more following end of treatment or clearance of the virus
  - Newly positive HCV RNA PCR within 24 weeks of end of treatment or clearance if reinfected with a different genotype
- Start of follow up:
  - Taken from end of treatment for individuals undergoing treatment
  - Taken as the mid-point between last positive PCR and first negative PCR result for spontaneous clearance
- Date of reinfection:
  - Mid-point between last negative HCV PCR result and first positive result

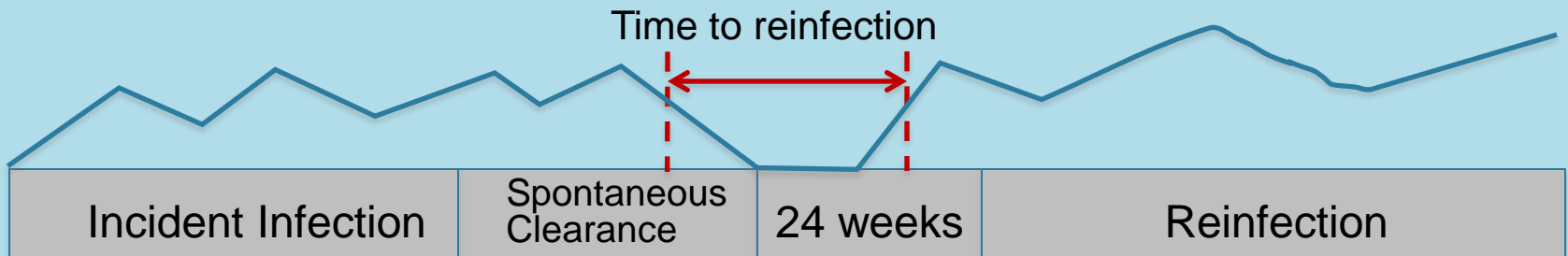
# Definitions


Reinfection: Newly positive HCV RNA PCR within 24 weeks of end of treatment or clearance if reinfected with a different genotype

Different genotype, treated incident infection



Same genotype, spontaneously cleared incident infection



The logo of the British HIV Association (BHIVA) is a circular emblem with a complex, geometric design. It features a central circle surrounded by concentric rings of smaller circles and lines, creating a sunburst or molecular-like appearance. The logo is positioned behind the main title text.

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British HIV Association  
**BHIVA**

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A light blue map of the United Kingdom is visible in the background. A red circular marker is placed on the map, indicating the location of Manchester in the north-western part of England.

**19th Annual Conference of the  
British HIV Association (BHIVA)**

**16–19 April 2013**

Manchester Central Convention Complex