

# Pre-conference Nurses' Course



## Mr Ricky Gellissen

Imperial College Healthcare NHS Trust, London, UK

## Dr Matthew Grundy-Bowers

City University London, UK



# Pre-conference Nurses' Course



## Mr Ricky Gellissen

Imperial College Healthcare NHS Trust, London, UK

| COMPETING INTEREST OF FINANCIAL VALUE $\geq$ £1,000: |               |
|--|---------------|
| Speaker Name   | Statement     |
| Ricky Gellissen                                      | None declared |
| Date   | 09/12/2015    |



# Pre-conference Nurses' Course



## Dr Matthew Grundy-Bowers

City University London, UK

| COMPETING INTEREST OF FINANCIAL VALUE $\geq$ £1,000: |               |
|--|---------------|
| Speaker Name   | Statement     |
| Matthew Grundy-Bowers                                | None declared |
| Date   | 09/12/2015    |



## PRE-CONFERENCE NURSES' COURSE



### Acute hepatitis C infection in HIV-positive MSM' partner notification and issues of re-infection

Mr Ricky Gellissen LLM RN *Imperial College Healthcare NHS Trust, London, UK*  
Dr Matthew Grundy-Bowers PhD MSc PGCertSH RN NDFS RH *City University London, UK*

**Respect** our patients and colleagues | Encourage **innovation** in all that we do | Provide the highest quality **care** | Work together for the **achievement** of outstanding results | Take **pride** in our success

# Declaration of interests

- None

**Respect** our patients and colleagues | Encourage **innovation** in all that we do | Provide the highest quality **care** | Work together for the **achievement** of outstanding results | Take **pride** in our success

# HIV-HCV co-infection

Co-infection Is Common! 9M People Worldwide

- About **1 out of 4 people** with HIV also have Hepatitis C<sup>1 2 3</sup>
- In the context of HIV co-infection HCV is associated with significant morbidity and mortality<sup>4 5</sup>



<sup>1</sup> World J Gastroenterol 2009 August 14; 15(30): 3713-3724

<sup>2</sup> HIV and hepatitis C co-infection within the CAESAR study J Amin, M et al

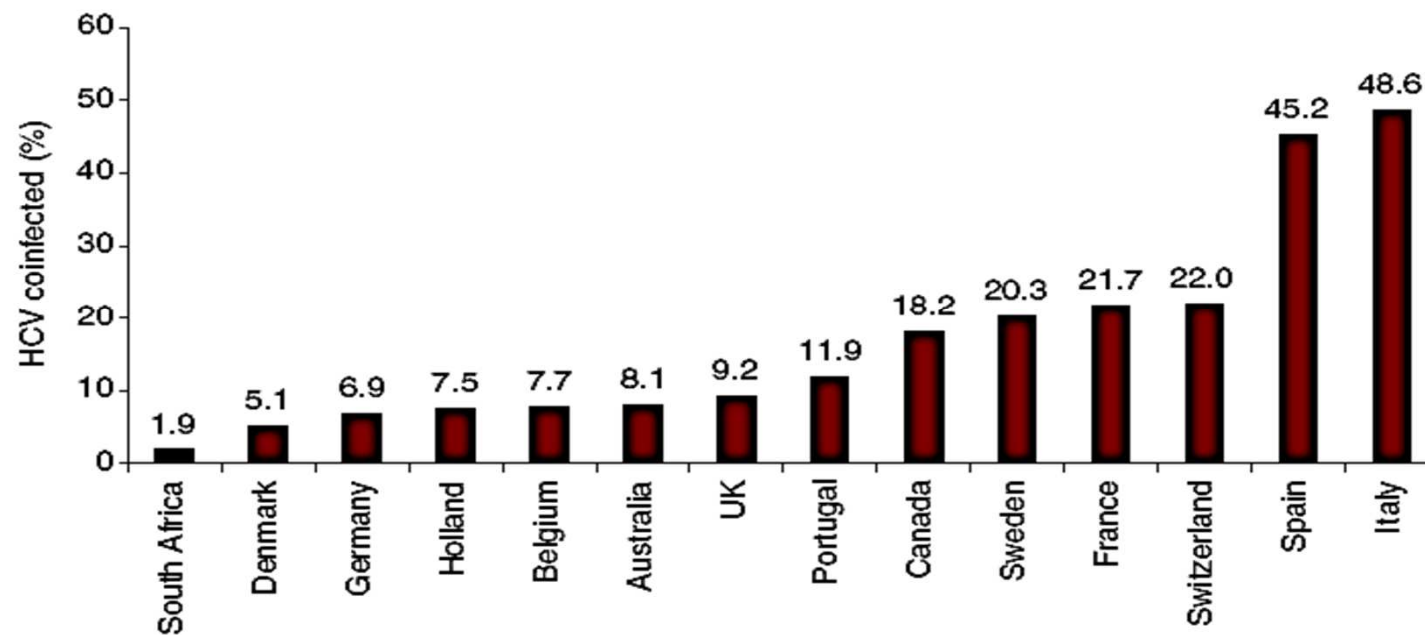
<sup>3</sup> Danta M & Dusheiko G (2008) Acute HCV in HIV-positive individuals—a review. *Current pharmaceutical design*, 14(17): 1690-1697

<sup>4</sup> Sulkowski M (2008) Viral hepatitis and HIV coinfection. *Journal of hepatology*, 48(2): 353-367

<sup>5</sup> Schmidt A, Rockstroh J, Vogel M, der Heiden M, Baillot A, Krznaric I, & Radun D (2011) Trouble with bleeding: risk factors for acute hepatitis C among HIV-positive gay men from Germany—a case-control study. *PloS one*, 6(3): e17781

# HIV-HCV co-infection

Prevalence differs in countries



World J Gastroenterol 2009 August 14; 15(30): 3713-3724  
HIV and hepatitis C co-infection within the CAESAR studyJ Amin, M et al

# Co-infection in MSM

- Between 2002 and 2006 hepatitis C infection increased among MSM in London & Brighton<sup>1</sup>
- Estimates suggest that in the UK the incidence of acute HCV infection as increased by 20% every year since 2002



<sup>1</sup>Giraudon I, Ruf M, Maguire H, Charlett A, Ncube F, Turner J, Gilson R & Barton S (2008) Increase in diagnosed newly acquired hepatitis C in HIV-positive men who have sex with men across London and Brighton, 2002–2006: is this an outbreak?. *Sexually transmitted infections*, 84(2): 111-115

<sup>2</sup>Tohme R & Holmberg S (2010) Is sexual contact a major mode of hepatitis C virus transmission?. *Hepatology*, 52(4): 1497-1505



# Co-infection in MSM

- The burden of disease is likely to increase over the next two decades<sup>1</sup>
- There was an increase in prevalence among HIV-positive MSM in the Netherlands from 5.6% in 1995 to 20.9% in 2008, of which 13% had a recent infection<sup>2 3</sup>

<sup>1</sup>Papatheodoridis G & Hatzakis A (2012) Public health issues of hepatitis C virus infection. *Best Practice & Research Clinical Gastroenterology*, 26(4): 371-380

<sup>2</sup>Urbanus A, van de Laar T, Stolte I, Schinkel J, Heijman T, Coutinho R & Prins M (2009) Hepatitis C virus infections among HIV-infected men who have sex with men: an expanding epidemic. *AIDS*, 23(12): F1-F7

<sup>3</sup>Urbanus A, Van De Laar T, Geskus R, Vanhommerig J, Van Rooijen M, Schinkel J Heijman T, Coutinho R & Prins M (2014) Trends in hepatitis C virus infections among MSM attending a sexually transmitted infection clinic; 1995–2010. *AIDS*, 28(5): 781-790

# Acute hepatitis C

- Symptomatic acute HCV only occurs in about 15% of those infected with HCV<sup>1</sup>
- Due to the asymptomatic nature of acute HCV in the early stages can make it difficult to diagnose<sup>2</sup>

<sup>1</sup> Maheshwari A, Ray S & Thuluvath P (2008) Acute hepatitis C. *The Lancet*, 372(9635): 321-332

<sup>2</sup> Low E, Vogel M, Rockstroh J & Nelson M (2008) Acute hepatitis C in HIV-positive individuals. *AIDS Rev*, 10(4): 245-53

# Testing for hepatitis C in HIV-positive patients

- HCV testing at HIV diagnosis
- Annual HCV testing if not in an at-risk group who may require more frequent testing
- In patients with an elevated transaminases of unknown cause have an HCV-PCR test
- Those who have repeated high-risk exposures but persistently normal transaminases are screened with anti-HCV and HCV-PCR, or HCV-PCR alone

# Testing patients who have cleared HCV

- If previously successfully treated for or spontaneously have cleared infection and are HCV antibody positive, at 3–6-monthly intervals with anti-HCV and HCV-PCR, or HCV-PCR alone

# Treatment of hepatitis C

- Co-infection may complicate the delivery of ARTs<sup>1</sup>
- Treatment can be difficult<sup>2</sup>
- Newer triple/combination therapy treatments more effective and shorter in duration<sup>3 4 5</sup>

<sup>1</sup> Sulkowski M (2008) Viral hepatitis and HIV coinfection. *Journal of hepatology*, 48(2): 353-367

<sup>2</sup> Sinclair M, McPherson S, Bor R & Orban L (2011) Another dragon in the kitchen: Psychological experiences of hepatitis C treatment among HIV-hepatitis C co-infected gay men. *Counselling and Psychotherapy Research*, 11(3): 228-236

<sup>3</sup> Schneider M & Sarrazin C (2014) Antiviral therapy of hepatitis C in 2014: Do we need resistance testing?. *Antiviral research*, 105: 64-71

<sup>4</sup> deLemos A & Chung R (2014) Hepatitis C treatment: an incipient therapeutic revolution. *Trends in molecular medicine*, 20(6): 315-321

<sup>5</sup> Andronescu D, Diaconu S, Tiuca N, Purcarea R & Andronescu C (2014) Hepatitis C Treatment & Management. *Journal of medicine and life*, 7(1): 31

# When to treat and what combination?

Acute HCV co-infection:

- Treat now?
- Wait for approval on new agents?



- Pegylated interferon
- Ribavirin
- **Boceprevir**
- **Telaprevir**
- Simeprevir
- Sofosbuvir
- Ledipasvir
- Daclatasvir
- Viekirax
- Exviera

Improved treatment options for patients with cirrhosis, and pre and post liver transplant

- Treating acute HCV results in sustained virological response (SVR) rates of approximately 60%. Not influenced by HCV genotype <sup>1</sup>

<sup>1</sup> Gilleece YC, Browne RE, Asboe D, *et al.* Transmission of hepatitis C virus among HIV-positive homosexual men and response to a 24-week course of pegylated interferon and ribavirin. J Acquir Immune Defic Syndr 2005;40:41–6

# Acute hepatitis C: BHIVA

## Recommendations (update 2014)

- Patients who achieve an undetectable HCV RNA without therapy undergo HCV RNA measurements at 4, 12, 24 and 48 weeks to ensure spontaneous clearance.
- Patients without a drop of 2 log<sub>10</sub> in HCV RNA at 4 week post diagnosis, or with a positive HCV RNA 12 weeks post diagnosis, are offered therapy.
- All patients be offered combination therapy with pegylated interferon and weight-based ribavirin.



# Acute hepatitis C: BHIVA Recommendations (update 2014)

- Recommend treatment is discontinued if patients do not achieve an EVR.
- 24 weeks treatment if RVR is achieved; for 48 weeks if not.
- Patients who relapse are managed as for chronic hepatitis C .
- Patients who have been re-infected are managed as for AHC .

# Transmission

- Clinicians in post industrialised countries have been reporting outbreaks of HCV among MSM since 2000<sup>1</sup>
- There appears to be evidence of a large international transmission network<sup>2</sup>
- A study by van de Laar *et al* (2009) reveals the existence of a large European MSM-specific transmission network, linking the independently reported national HCV outbreaks in England, the Netherlands, Germany and France. <sup>3</sup>

<sup>1</sup> Schmidt A, Rockstroh J, Vogel M, der Heiden M, Baillot A, Krznaric I, & Radun D (2011) Trouble with bleeding: risk factors for acute hepatitis C among HIV-positive gay men from Germany—a case-control study. *PloS one*, 6(3): e17781

<sup>2</sup> Sulkowski M (2008) Viral hepatitis and HIV coinfection. *Journal of hepatology*, 48(2): 353-367

<sup>3</sup> *Gastroenterology*. 2009 May ; 136(5): 1609–1617.

# Transmission

- In MSM HCV is the result of a change in behavioural risk factors<sup>1</sup>
- Sero-sorting is likely to contribute to hepatitis C transmission through condomless anal sex<sup>2 3</sup>
  - Higher blood and seminal HCV VL among HIV+ MSM may increase transmission<sup>4</sup>
  - HIV infection can compromise the gastrointestinal immune system<sup>4</sup>

<sup>1</sup> Danta M & Dusheiko G (2008) Acute HCV in HIV-positive individuals-a review. *Current pharmaceutical design*, 14(17): 1690-1697

<sup>2</sup> Owen G (2008) An 'elephant in the room'? Stigma and hepatitis C transmission among HIV-positive 'serosorting' gay men. *Culture, health & sexuality*, 10(6): 601-610

<sup>3</sup> Stall R, Wei C, Raymond H & McFarland W (2011) Do rates of unprotected anal intercourse among HIV-positive MSM present a risk for hepatitis C transmission?. *Sexually transmitted infections*, 87(5): 439-441

<sup>4</sup> Marcus J & Katz K (2011) HCV infection as an emerging sexually transmitted disease. *MLO Med Lab Obs*, 43(4): 52, 54-55

# Transmission of HCV

- Typically requires direct blood exposure<sup>1</sup>
- Has been identified in bodily fluids associated with sex<sup>1</sup>
- Exact mode of sexual transmission not yet determined<sup>1</sup>
- Studies of discordant heterosexual couples suggest that sexual transmission is not common<sup>1 2</sup>
- Sexual transmission of HCV among HIV-negative MSM to date is rarely observed<sup>1 3 4</sup>

**There is often an overlap (intersection) of exposures<sup>1</sup>**

<sup>1</sup>Schmidt A, Rockstroh J, Vogel M, der Heiden M, Baillot A, Krznaric I, & Radun D (2011) Trouble with bleeding: risk factors for acute hepatitis C among HIV-positive gay men from Germany—a case-control study. *PloS one*, 6(3): e17781

<sup>2</sup>Papatheodoridis G & Hatzakis A (2012) Public health issues of hepatitis C virus infection. *Best Practice & Research Clinical Gastroenterology*, 26(4): 371-380

<sup>3</sup>Raymond H, Chu P, Nieves-Rivera I, Louie B, McFarland W & Pandori M (2012) Hepatitis C Infection Among Men Who Have Sex With Men, San Francisco, 2011. *Sexually transmitted diseases*, 39(12): 985-986

<sup>4</sup>Urbanus A, van de Laar T, Stolte I, Schinkel J, Heijman T, Coutinho R & Prins M (2009) Hepatitis C virus infections among HIV-infected men who have sex with men: an expanding epidemic. *AIDS*, 23(12): F1-F7

# Traumatic anal sex practices

- Traumatic anal sexual practices in particular fisting<sup>1 2 4 5 7</sup> without gloves<sup>2</sup>, especially as the receptive partner<sup>2 3</sup> and using sex toys<sup>1 7</sup>
- Exposure to bleeding during sex<sup>2 5 6</sup>
- 5 fold increase in the risk of HCV in HIV+ MSM involved in fisting or using sex toys<sup>3</sup>

<sup>1</sup>Tohme R & Holmberg S (2010) Is sexual contact a major mode of hepatitis C virus transmission?. *Hepatology*, 52(4): 1497-1505

<sup>2</sup>Schmidt A, Rockstroh J, Vogel M, der Heiden M, Baillot A, Krznaric I, & Radun D (2011) Trouble with bleeding: risk factors for acute hepatitis C among HIV-positive gay men from Germany—a case-control study. *PLoS one*, 6(3): e17781

<sup>3</sup>Urbanus A, Van De Laar T, Geskus R, Vanhommerig J, Van Rooijen M, Schinkel J Heijman T, Coutinho R & Prins M (2014) Trends in hepatitis C virus infections among MSM attending a sexually transmitted infection clinic; 1995–2010. *AIDS*, 28(5): 781-790

<sup>4</sup>Matser A, Vanhommerig J, van der Loeff M, Geskus R, de Vries H, Prins J, Prins M & Bruisten S (2013) HIV-infected men who have sex with men who identify themselves as belonging to subcultures are at increased risk for hepatitis C infection. *PLoS one*, 8(3): e57740

<sup>5</sup>Larsen C, Chaix M, Le Strat Y, Velter A, Gervais A, Aupérin I, Alric L, Duval X, Mialhes P, Pioche C, Pol S, Piroth L, Delarocque-Astagneau E (2011) Gaining greater insight into HCV emergence in HIV-infected men who have sex with men: the HEPAIG Study. *PLoS one*, 6(12): e29322

<sup>6</sup>Russell M, Chen M, Nochajski T, Testa M, Zimmerman S & Hughes P (2009) Risky sexual behavior, bleeding caused by intimate partner violence, and hepatitis C virus infection in patients of a sexually transmitted disease clinic. *American journal of public health*, 99(Suppl 1): S173-9

<sup>7</sup>Lea T, Mao L, Bath N, Prestage G, Zablotska I, de Wit J & Holt M (2013) Injecting drug use among gay and bisexual men in Sydney: prevalence and associations with sexual risk practices and HIV and hepatitis C infection. *AIDS and Behavior*, 17(4): 1344-1351

# Belonging to a subculture

- HCV infection was associated with the following subcultures:
  - with seeking partners online or in sex venues<sup>1</sup>
  - bareback subculture<sup>2</sup>
  - leather/rubber/lycra<sup>3</sup>
  - As is having multiple sexual partners<sup>3 4 5 6 7</sup>
  - Engaging in group sex is associated with HCV infection among HIV+ MSM<sup>1 2 3 4 5 6 8</sup>

<sup>1</sup>Larsen C, Chaix M, Le Strat Y, Velter A, Gervais A, Aupérin I, Alric L, Duval X, Mialhes P, Pioche C, Pol S, Piroth L, Delarocque-Astagneau E (2011) Gaining greater insight into HCV emergence in HIV-infected men who have sex with men: the HEPAIG Study. *PloS one*, 6(12): e29322

<sup>2</sup>Le Talec J (2013) When 'raw sex' turns to a 'raw deal'... taking the opportunity to think about sex? Interviews with HIV-positive gay men diagnosed with acute hepatitis C. *Culture, health & sexuality*, 15(10): 1133-1147

<sup>3</sup>Matser A, Vanhommerig J, van der Loeff M, Geskus R, de Vries H, Prins J, Prins M & Bruisten S (2013) HIV-infected men who have sex with men who identify themselves as belonging to subcultures are at increased risk for hepatitis C infection. *PloS one*, 8(3): e57740

<sup>4</sup>Gambotti L and the acute hepatitis C collaborating group (2005) Acute hepatitis C infection in HIV positive men who have sex with men in Paris, France, 2001-2004. *Eurosurveillance*, 10(5):

<sup>5</sup>Owen G (2008) An 'elephant in the room'? Stigma and hepatitis C transmission among HIV-positive 'serosorting' gay men. *Culture, health & sexuality*, 10(6): 601-610

<sup>6</sup>Terrault N (2005) Sex and hepatitis C. *The American journal of gastroenterology*, 100(4): 825-826

<sup>7</sup>Tohme R & Holmberg S (2010) Is sexual contact a major mode of hepatitis C virus transmission?. *Hepatology*, 52(4): 1497-1505

<sup>8</sup>Schmidt A, Rockstroh J, Vogel M, der Heiden M, Baillot A, Krznaric I, & Radun D (2011) Trouble with bleeding: risk factors for acute hepatitis C among HIV-positive gay men from Germany—a case-control study. *PloS one*, 6(3): e17781

# Drug use

- IDU is significantly associated with HCV infection<sup>1 2 3 4 5</sup>
- Non IDU: Drugs for sex<sup>6</sup> particularly nasal insufflation<sup>1 7</sup>

<sup>1</sup>Schmidt A, Rockstroh J, Vogel M, der Heiden M, Baillot A, Krznaric I, & Radun D (2011) Trouble with bleeding: risk factors for acute hepatitis C among HIV-positive gay men from Germany—a case-control study. *PloS one*, 6(3): e17781

<sup>2</sup>Raymond H, Chu P, Nieves-Rivera I, Louie B, McFarland W & Pandori M (2012) Hepatitis C Infection Among Men Who Have Sex With Men, San Francisco, 2011. *Sexually transmitted diseases*, 39(12): 985-986

<sup>3</sup>Papatheodoridis G & Hatzakis A (2012) Public health issues of hepatitis C virus infection. *Best Practice & Research Clinical Gastroenterology*, 26(4): 371-380

<sup>4</sup>Urbanus A, Van De Laar T, Geskus R, Vanhommerig J, Van Rooijen M, Schinkel J Heijman T, Coutinho R & Prins M (2014) Trends in hepatitis C virus infections among MSM attending a sexually transmitted infection clinic; 1995–2010. *AIDS*, 28(5): 781-790

<sup>5</sup>Lea T, Mao L, Bath N, Prestage G, Zablotska I, de Wit J & Holt M (2013) Injecting drug use among gay and bisexual men in Sydney: prevalence and associations with sexual risk practices and HIV and hepatitis C infection. *AIDS and Behavior*, 17(4): 1344-1351

<sup>6</sup>Matser A, Vanhommerig J, van der Loeff M, Geskus R, de Vries H, Prins J, Prins M & Bruisten S (2013) HIV-infected men who have sex with men who identify themselves as belonging to subcultures are at increased risk for hepatitis C infection. *PloS one*, 8(3): e57740

<sup>7</sup>Larsen C, Chaix M, Le Strat Y, Velter A, Gervais A, Aupérin I, Alric L, Duval X, Mialhes P, Pioche C, Pol S, Piroth L, Delarocque-Astagneau E (2011) Gaining greater insight into HCV emergence in HIV-infected men who have sex with men: the HEPAIG Study. *PloS one*, 6(12): e29322

<sup>8</sup>Lambers F, Prins M, Thomas X, Molenkamp R, Kwa D, Brinkman K, van der Meer J, Schinkel J & MOSAIC (MSM Observational Study of Acute Infection with hepatitis C) study group (2011) Alarming incidence of hepatitis C virus re-infection after treatment of sexually acquired acute hepatitis C virus infection in HIV-infected MSM. *AIDS*, 25(17) F21-F27

# Intersection of exposures

- Rough sexual techniques in conjunction with the use of recreational drugs were associated with HCV infection<sup>1</sup>
- HIV+ MSM who injected drugs more likely to be HCV+, in addition were more likely to have used party drugs for sex and to have engaged in esoteric sexual practices (BDSM, leather/rubber, water sports, fisting, felching)<sup>2</sup>

<sup>1</sup>Urbanus A, van de Laar T, Stolte I, Schinkel J, Heijman T, Coutinho R & Prins M (2009) Hepatitis C virus infections among HIV-infected men who have sex with men: an expanding epidemic. *AIDS*, 23(12): F1-F7

<sup>2</sup>Lea T, Mao L, Bath N, Prestage G, Zablotska I, de Wit J & Holt M (2013) Injecting drug use among gay and bisexual men in Sydney: prevalence and associations with sexual risk practices and HIV and hepatitis C infection. *AIDS and Behavior*, 17(4): 1344-1351



# Condomless anal sex

- Condomless anal sex<sup>1 2 3</sup> both insertive<sup>4</sup> & receptive<sup>1 4 5</sup> among HIV+ MSM<sup>2</sup> was significantly associated with HCV infection

<sup>1</sup>Owen G (2008) An 'elephant in the room'? Stigma and hepatitis C transmission among HIV-positive 'serosorting' gay men. *Culture, health & sexuality*, 10(6): 601-610

<sup>2</sup>Gambotti L and the acute hepatitis C collaborating group (2005) Acute hepatitis C infection in HIV positive men who have sex with men in Paris, France, 2001-2004. *Eurosurveillance*, 10(5):

<sup>3</sup>Tohme R & Holmberg S (2010) Is sexual contact a major mode of hepatitis C virus transmission?. *Hepatology*, 52(4): 1497-1505

<sup>4</sup>Urbanus A, Van De Laar T, Geskus R, Vanhommerig J, Van Rooijen M, Schinkel J Heijman T, Coutinho R & Prins M (2014) Trends in hepatitis C virus infections among MSM attending a sexually transmitted infection clinic; 1995–2010. *AIDS*, 28(5): 781-790

<sup>5</sup>Matser A, Vanhommerig J, van der Loeff M, Geskus R, de Vries H, Prins J, Prins M & Bruisten S (2013) HIV-infected men who have sex with men who identify themselves as belonging to subcultures are at increased risk for hepatitis C infection. *PloS one*, 8(3): e57740

# Concomitant STI

- Having an concomitant STI (syphilis<sup>1 2</sup>, gonorrhoea<sup>1 2</sup>, Herpes<sup>1</sup> or chlamydia<sup>2 3</sup>) either in the year preceding diagnosis or at the time of diagnosis<sup>2</sup>

<sup>1</sup>Gambotti L and the acute hepatitis C collaborating group (2005) Acute hepatitis C infection in HIV positive men who have sex with men in Paris, France, 2001-2004. *Eurosurveillance*, 10(5):

<sup>3</sup>Larsen C, Chaix M, Le Strat Y, Velter A, Gervais A, Aupérin I, Alric L, Duval X, Mialhes P, Pioche C, Pol S, Piroth L, Delarocque-Astagneau E (2011) Gaining greater insight into HCV emergence in HIV-infected men who have sex with men: the HEPAIG Study. *PloS one*, 6(12): e29322

<sup>3</sup>Urbanus A, Van De Laar T, Geskus R, Vanhommerig J, Van Rooijen M, Schinkel J Heijman T, Coutinho R & Prins M (2014) Trends in hepatitis C virus infections among MSM attending a sexually transmitted infection clinic; 1995-2010. *AIDS*, 28(5): 781-790

# Stigmatisation

- There is stigma associated with HIV-HCV co-infection<sup>1</sup>
- Stigmatisation in relation to co-infection, the presumption of IDU or the engagement in specific sexual practice, the fear of rejection & lifestyle changes<sup>2</sup>
- In addition IDU MSM may feel stigmatised about that by clinicians and gay men<sup>3</sup>

<sup>1</sup>**Sinclair M, McPherson S, Bor R & Orban L** (2011) Another dragon in the kitchen: Psychological experiences of hepatitis C treatment among HIV-hepatitis C co-infected gay men. *Counselling and Psychotherapy Research*, 11(3): 228-236

<sup>2</sup>**Owen G** (2008) An 'elephant in the room'? Stigma and hepatitis C transmission among HIV-positive 'serosorting' gay men. *Culture, health & sexuality*, 10(6): 601-610

<sup>3</sup>**Lea T, Mao L, Bath N, Prestage G, Zablotska I, de Wit J & Holt M** (2013) Injecting drug use among gay and bisexual men in Sydney: prevalence and associations with sexual risk practices and HIV and hepatitis C infection. *AIDS and Behavior*, 17(4): 1344-1351

# Partner notification

1. Can be difficult
  - Timeline
  - Partner type
  - Use of technology
2. Sexual networks / drug networks
3. Overview of PN Steps / stages / provider referral
4. Auditable trail / tools
5. If already diagnosed with another STI/HIV Hepatitis C infection requires further PN (think about types of test)
6. Multi-disciplinary and on-going

# Re-infection

- In this high-risk group, the emergence of new viral strains following treatment failure is most commonly associated with emerging dominance of preexisting minority variants rather than reinfection. Superinfection may occur in this cohort but reinfection is overestimated by Sanger sequencing. <sup>1</sup>

<sup>1</sup>Abdelrahman T, Hughes J, Main J, McLauchlan J, Thursz M, and Thomson E. Next-Generation Sequencing Sheds Light on the Natural History of Hepatitis C Infection in Patients Who Fail Treatment. HEPATOLOGY 2015;61:88-97

# The challenge of prevention

Many men will have no desire to change their sexual practices<sup>1</sup>:

*‘I know full well that [hepatitis] may happen again, I’m well aware of that, but in principle I’m not going to change my sexual practices’ (Fabian, 36) (p1141)*

*‘I do bareback because the jury is out about how HCV is contracted and because I have fucked for years with HCV guys and not caught anything’ (P10) <sup>2</sup> (p233)*

<sup>1</sup>Le Talec J (2013) When ‘raw sex’ turns to a ‘raw deal’... taking the opportunity to think about sex? Interviews with HIV-positive gay men diagnosed with acute hepatitis C. *Culture, health & sexuality*, 15(10): 1133-1147

<sup>2</sup>Sinclair M, McPherson S, Bor R & Orban L (2011) Another dragon in the kitchen: Psychological experiences of hepatitis C treatment among HIV-hepatitis C co-infected gay men. *Counselling and Psychotherapy Research*, 11(3): 228-236

The elimination of unsafe sex is unlikely for all patients,  
therefore we need to work in partnership with our  
patients to promote harm reduction<sup>1</sup>

<sup>1</sup>Ekstrand M, Stall R, Kegeles S, Hays R, DeMayo M & Coates T (1993) Safer sex among gay men: what is the ultimate goal?. *AIDS*, 7: 281-282

# An approach<sup>1</sup>

- Create better climates for discussion
- Increase access to information and education
- Develop prevention strategies that include community-based interventions
- Enhance access to care for sexual concerns
- Increase research in human sexuality and evaluation of programs designed to promote sexual health

<sup>1</sup>Coleman E (2011) What is sexual health? Articulating a sexual health approach to HIV prevention for men who have sex with men. *AIDS and Behavior*, 15(1): 18-24



# Preventing reinfection (1)

- Be mindful some men may not disclose specific risks<sup>1</sup>
- Counteracting the stigma associated with HCV<sup>2</sup>
- Targeted prevention messages<sup>3</sup> that combine sexual health advice as well as safer drug use<sup>3 4</sup> and encourage MSM to discuss HCV with their partners<sup>2</sup>

<sup>1</sup>**Le Talc J** (2013) When 'raw sex' turns to a 'raw deal'... taking the opportunity to think about sex? Interviews with HIV-positive gay men diagnosed with acute hepatitis C. *Culture, health & sexuality*, 15(10): 1133-1147

<sup>2</sup>**Owen G** (2008) An 'elephant in the room'? Stigma and hepatitis C transmission among HIV-positive 'serosorting' gay men. *Culture, health & sexuality*, 10(6): 601-610

<sup>3</sup>**Lambers F, Prins M, Thomas X, Molenkamp R, Kwa D, Brinkman K, van der Meer J, Schinkel J & MOSAIC (MSM Observational Study of Acute Infection with hepatitis C) study group** (2011) Alarming incidence of hepatitis C virus re-infection after treatment of sexually acquired acute hepatitis C virus infection in HIV-infected MSM. *AIDS*, 25(17) F21-F27

<sup>4</sup>**Lea T, Mao L, Bath N, Prestage G, Zablotska I, de Wit J & Holt M** (2013) Injecting drug use among gay and bisexual men in Sydney: prevalence and associations with sexual risk practices and HIV and hepatitis C infection. *AIDS and Behavior*, 17(4): 1344-1351

# Preventing reinfection (2)

- Repeated risk counselling for HCV transmission before, during and after treatment<sup>1</sup>
- MI may be a useful tool<sup>2</sup>
- Reduction in number of hard sex partners<sup>3</sup>
- Increased sex education, surveillance and preventive work<sup>4</sup>

<sup>1</sup>Martin T, Martin N, Hickman M, Vickerman P, Page E, Everett R, Gazzard B & Nelson M (2013) Hepatitis C virus reinfection incidence and treatment outcome among HIV-positive MSM. *AIDS*, 27(16): 2551-2557

<sup>2</sup>Berg R, Ross M & Tikkanen R (2011) The effectiveness of MI4MSM: how useful is motivational interviewing as an HIV risk prevention program for men who have sex with men? A systematic review. *AIDS Education and Prevention*, 23(6): 533-549

<sup>3</sup>Lambers F, Prins M, Thomas X, Molenkamp R, Kwa D, Brinkman K, van der Meer J, Schinkel J & MOSAIC (MSM Observational Study of Acute Infection with hepatitis C) study group (2011) Alarming incidence of hepatitis C virus re-infection after treatment of sexually acquired acute hepatitis C virus infection in HIV-infected MSM. *AIDS*, 25(17) F21-F27

<sup>4</sup>Martin T, Martin N, Hickman M, Vickerman P, Page E, Everett R, Gazzard B & Nelson M (2013) Hepatitis C virus reinfection incidence and treatment outcome among HIV-positive MSM. *AIDS*, 27(16): 2551-2557

# Questions



# Resources

- **British HIV Association (BHIVA) guidelines for the treatment of HIV-1-positive adults with antiretroviral therapy 2015** can be found online at <http://www.bhiva.org/documents/Guidelines/Treatment/2015/2015-treatment-guidelines.pdf>
- **British HIV Association guidelines for the management of hepatitis viruses in adults infected with HIV 2013 (Updated September 2014)** can be found online at <http://www.bhiva.org/documents/Guidelines/Hepatitis/2013/HepatitisGuidelines2013.pdf>
- Drug-Drug-Interactions can be found at <http://www.hiv-druginteractions.org/> and <http://www.hep-druginteractions.org/>
- **British Association for Sexual Health & HIV (BASHH) Statement on Partner Notification for Sexually Transmissible Infections** can be found at <http://www.bashh.org/documents/4445.pdf>
- Caring for people with liver disease: a competence framework for nursing (Revised edition) can be found at <http://www.britishlivertrust.org.uk/health-professionals/british-liver-nurses-forum/caring-for-people-with-liver-disease-a-competence-framework-for-nursing/>
- National HIV Nursing Competencies can be found at <http://www.nhivna.org/competencies.aspx>

# References (1)

- Andronesu D, Diaconu S, Tiuca N, Purcarea R & Andronesu C (2014) Hepatitis C Treatment & Management. *Journal of medicine and life*, 7(1): 31
- Bauer H, Gibson P, Hernandez M, Kent C, Klausner J & Bolan G (2002) Intimate partner violence and high-risk sexual behaviors among female patients with sexually transmitted diseases. *Sexually transmitted diseases*, 29(7): 411-416
- Berg R, Ross M & Tikkanen R (2011) The effectiveness of MI4MSM: how useful is motivational interviewing as an HIV risk prevention program for men who have sex with men? A systematic review. *AIDS Education and Prevention*, 23(6): 533-549
- Cohen C, Giles A & Nelson M (2004) Sexual trauma associated with fisting and recreational drugs. *Sexually transmitted infections*, 80(6): 469-470
- Coleman E (2011) What is sexual health? Articulating a sexual health approach to HIV prevention for men who have sex with men. *AIDS and Behavior*, 15(1): 18-24
- Danta M & Dusheiko G (2008) Acute HCV in HIV-positive individuals-a review. *Current pharmaceutical design*, 14(17): 1690-1697
- Danta M, Brown D, Bhagani S, Pybus O, Sabin C, Nelson M, Fisher M, Johnson A & Dusheiko G (2007) Recent epidemic of acute hepatitis C virus in HIV-positive men who have sex with men linked to high-risk sexual behaviours. *AIDS*, 21(8): 983-991
- deLemos A & Chung R (2014) Hepatitis C treatment: an incipient therapeutic revolution. *Trends in molecular medicine*, 20(6): 315-321
- Ekstrand M, Stall R, Kegeles S, Hays R, DeMayo M & Coates T (1993) Safer sex among gay men: what is the ultimate goal?. *AIDS*, 7: 281-282
- Gambotti L and the acute hepatitis C collaborating group (2005) Acute hepatitis C infection in HIV positive men who have sex with men in Paris, France, 2001-2004. *Eurosurveillance*, 10(5): 41-46
- Gilleece Y, Browne R, Asboe D, Atkins M, Mandalia S, Bower M, Gazzard B & Nelson M (2005) Transmission of hepatitis C virus among HIV-positive homosexual men and response to a 24-week course of pegylated interferon and ribavirin. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, 40(1): 41-46
- Giraudon I, Ruf M, Maguire H, Charlett A, Ncube F, Turner J, Gilson R & Barton S (2008) Increase in diagnosed newly acquired hepatitis C in HIV-positive men who have sex with men across London and Brighton, 2002-2006: is this an outbreak?. *Sexually transmitted infections*, 84(2): 111-115
- Golin C, Earp J, Grodensky C, Patel S, Suchindran C, Parikh M, Kalichman S, Patterson K, Swygard H, Quinlivan E, Amola K, Chariyeva Z & Groves J (2012) Longitudinal effects of SafeTalk, a motivational interviewing-based program to improve safer sex practices among people living with HIV/AIDS. *AIDS and Behavior*, 16(5): 1182-1191
- Golin C, Patel S, Tiller K, Quinlivan E, Grodensky C & Boland M (2007) Start talking about risks: development of a motivational interviewing-based safer sex program for people living with HIV. *AIDS and Behavior*, 11(1): 72-83
- Ingiliz P, Krznaric I, Stellbrink H, Knecht G, Lutz T, Noah C, Stocker H, Obermeier M, Dupke S, Boesecke C, Rockstroh J, Maumgarten A & Hoffmann C (2014) Multiple hepatitis C virus (HCV) reinfections in HIV-positive men who have sex with men: no influence of HCV genotype switch or interleukin-28B genotype on spontaneous clearance. *HIV medicine*, 15: 355-361
- Lambers F, Prins M, Thomas X, Molenkamp R, Kwa D, Brinkman K, van der Meer J, Schinkel J & MOSAIC (MSM Observational Study of Acute Infection with hepatitis C) study group (2011) Alarming incidence of hepatitis C virus re-infection after treatment of sexually acquired acute hepatitis C virus infection in HIV-infected MSM. *AIDS*, 25(17): F21-F27
- Larsen C, Chaix M, Le Strat Y, Velter A, Gervais A, Aupérin I, Alric L, Duval X, Mialhes P, Pioche C, Pol S, Piroth L, Delarocque-Astagneau E (2011) Gaining greater insight into HCV emergence in HIV-infected men who have sex with men: the HEPAIG Study. *PloS one*, 6(12): e29322
- Le Tallec J** (2013) When 'raw sex' turns to a 'raw deal'... taking the opportunity to think about sex? Interviews with HIV-positive gay men diagnosed with acute hepatitis C. *Culture, health & sexuality*, 15(10): 1133-1147

# References (2)

- Lea T, Mao L, Bath N, Prestage G, Zablotska I, de Wit J & Holt M (2013) Injecting drug use among gay and bisexual men in Sydney: prevalence and associations with sexual risk practices and HIV and hepatitis C infection. *AIDS and Behavior*, 17(4): 1344-1351
- Low E, Vogel M, Rockstroh J & Nelson M (2008) Acute hepatitis C in HIV-positive individuals. *AIDS Rev*, 10(4): 245-53
- Maheshwari A, Ray S & Thuluvath P (2008) Acute hepatitis C. *The Lancet*, 372(9635): 321-332
- Martin T, Martin N, Hickman M, Vickerman P, Page E, Everett R, Gazzard B & Nelson M (2013) Hepatitis C virus reinfection incidence and treatment outcome among HIV-positive MSM. *AIDS*, 27(16): 2551-2557
- Matser A, Vanhommerig J, van der Loeff M, Geskus R, de Vries H, Prins J, Prins M & Bruisten S (2013) HIV-infected men who have sex with men who identify themselves as belonging to subcultures are at increased risk for hepatitis C infection. *PloS one*, 8(3): e57740
- Owen G (2008) An 'elephant in the room'? Stigma and hepatitis C transmission among HIV-positive 'serosorting' gay men. *Culture, health & sexuality*, 10(6): 601-610
- Papathodoridis G & Hatzakis A (2012) Public health issues of hepatitis C virus infection. *Best Practice & Research Clinical Gastroenterology*, 26(4): 371-380
- Raymond H, Chu P, Nieves-Rivera I, Louie B, McFarland W & Pandori M (2012) Hepatitis C Infection Among Men Who Have Sex With Men, San Francisco, 2011. *Sexually transmitted diseases*, 39(12): 985-986
- Russell M, Chen M, Nochajski T, Testa M, Zimmerman S & Hughes P (2009) Risky sexual behavior, bleeding caused by intimate partner violence, and hepatitis C virus infection in patients of a sexually transmitted disease clinic. *American journal of public health*, 99(Suppl 1): S173-9
- Schmidt A, Rockstroh J, Vogel M, der Heiden M, Baillot A, Krznaric I, & Radun D (2011) Trouble with bleeding: risk factors for acute hepatitis C among HIV-positive gay men from Germany—a case-control study. *PloS one*, 6(3): e17781
- Schneider M & Sarrazin C (2014) Antiviral therapy of hepatitis C in 2014: Do we need resistance testing?. *Antiviral research*, 105: 64-71
- Sinclair M, McPherson S, Bor R & Orban L (2011) Another dragon in the kitchen: Psychological experiences of hepatitis C treatment among HIV-hepatitis C co-infected gay men. *Counselling and Psychotherapy Research*, 11(3): 228-236
- Stall R, Wei C, Raymond H & McFarland W (2011) Do rates of unprotected anal intercourse among HIV-positive MSM present a risk for hepatitis C transmission?. *Sexually transmitted infections*, 87(5): 439-441
- Sulkowski M (2008) Viral hepatitis and HIV coinfection. *Journal of hepatology*, 48(2): 353-367
- Terrault N (2005) Sex and hepatitis C. *The American journal of gastroenterology*, 100(4): 825-826
- Tohme R & Holmberg S (2010) Is sexual contact a major mode of hepatitis C virus transmission?. *Hepatology*, 52(4): 1497-1505
- Urbanus A, Van De Laar T, Geskus R, Vanhommerig J, Van Rooijen M, Schinkel J, Heijman T, Coutinho R & Prins M (2014) Trends in hepatitis C virus infections among MSM attending a sexually transmitted infection clinic; 1995–2010. *AIDS*, 28(5): 781-790
- Urbanus A, van de Laar T, Stolte I, Schinkel J, Heijman T, Coutinho R & Prins M (2009) Hepatitis C virus infections among HIV-infected men who have sex with men: an expanding epidemic. *AIDS*, 23(12): F1-F7
- van de Laar T, Matthews G, Prins M & Danta M (2010) Acute hepatitis C in HIV-infected men who have sex with men: an emerging sexually transmitted infection. *AIDS*, 24(12): 1799-1812