Hepatitis C in 2012
Can we eradicate it?

Graham R Foster
Professor of Hepatology
QMUL
HCV in 2012

• Why are we bothered?

• What can we do?

• What should we do?
HCV in 2012

• Why are we bothered?

• What can we do?

• What should we do?
HCV – What does it do?

![Graph showing the percent of patients with cirrhosis by age group. The graph includes data for Caucasians.](image-url)
HCV – What does it do?
HCV – What does it do?
HCV – What does it do?

• East London 2005 – 30% of injectors with HCV had cirrhosis

• East London 2012 – new services for ascites and liver cancer

This virus is causing real problems
HCV – why bother?

• The virus is spreading

• Up to 25% of new injectors are infected in the first year of drug use
Incidence of hepatitis C

- Estimates of annual incidence in IDUs
  - Estimates of around 3-6% per year
  - However, was 42% in one London study
- Difficult to quantify
  - Main on-going transmission is in IDUs
- Estimates of the size of the current IDU population
  - 100,000-120,000
  - turnover / length of injecting uncertain
- could amount to 6,000 infections per year
Incidence of hepatitis C

• Estimates of annual incidence in IDUs
  – Estimates of around 3-6% per year
  – However, was 42% in one London study

• Difficult to quantify
  Main on-going transmission is in IDUs

• Estimates of the size of the current IDU population
  – turnover / length of injecting uncertain

• could amount to 6,000 infections per year
Incidence of hepatitis C

• Estimates of annual incidence in IDUs
  – Estimates of around 3-6% per year
  – However, was 42% in one London study

• Difficult to quantify
  
  Main on-going transmission is in IDUs

• Estimates of the size of the current IDU population
  – turnover / length of injecting uncertain

• could amount to 5,000 infections per year
HCV in 2012

• Why are we bothered?

• What can we do?

• What should we do?
The East London Model

• A new treatment model

• Blood Borne Virus (BBV) Nurse led

• Hub and spoke model
  – 3 central Specialist Addiction Units
  – 10 outreach clinics

• Monthly consultant led clinic in SAU to decide on treatment
## Demographics

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
<th>Current-injection drug users</th>
<th>%</th>
<th>Ex-injection drug users</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>152</td>
<td>77</td>
<td>51</td>
<td>75</td>
<td>49</td>
</tr>
<tr>
<td><strong>Average age of infection</strong></td>
<td>23</td>
<td>23</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average age of diagnosis</strong></td>
<td>38</td>
<td>37</td>
<td>38</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average age of treatment</strong></td>
<td>40</td>
<td>40</td>
<td>41</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>121</td>
<td>63</td>
<td>82</td>
<td>58</td>
<td>77</td>
</tr>
<tr>
<td>Female</td>
<td>31</td>
<td>14</td>
<td>18</td>
<td>17</td>
<td>23</td>
</tr>
<tr>
<td><strong>HCV Genotype</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>68</td>
<td>30</td>
<td>39</td>
<td>38</td>
<td>51</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>9</td>
<td>12</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>70</td>
<td>37</td>
<td>48</td>
<td>33</td>
<td>44</td>
</tr>
<tr>
<td>¾</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
### Treatment outcomes

<table>
<thead>
<tr>
<th>Category</th>
<th>Overall</th>
<th>Current-injection drug users</th>
<th>%</th>
<th>Ex-injection drug users</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>152</td>
<td>77</td>
<td>51</td>
<td>75</td>
<td>49</td>
</tr>
<tr>
<td>Compliant with treatment</td>
<td>118</td>
<td>61</td>
<td>79</td>
<td>57</td>
<td>76</td>
</tr>
<tr>
<td>End of treatment response (ETR)</td>
<td>105</td>
<td>54</td>
<td>70</td>
<td>51</td>
<td>68</td>
</tr>
<tr>
<td>Sustained viral response (SVR)</td>
<td>83</td>
<td>45</td>
<td>58</td>
<td>38</td>
<td>51</td>
</tr>
<tr>
<td>Non-responders</td>
<td>38</td>
<td>18</td>
<td>23</td>
<td>20</td>
<td>27</td>
</tr>
<tr>
<td>Relapsed after successful treatment</td>
<td>18</td>
<td>9</td>
<td>12</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Partial response to treatment</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lost to follow up or outcome unknown</td>
<td>12</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Reinfection</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Death</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
## Treatment outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Overall</th>
<th>Current-injection drug users</th>
<th>%</th>
<th>Ex-injection drug users</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>152</td>
<td>77</td>
<td>51</td>
<td>75</td>
<td>49</td>
</tr>
<tr>
<td>Compliant with treatment</td>
<td>118</td>
<td>61</td>
<td>79</td>
<td>57</td>
<td>76</td>
</tr>
<tr>
<td>End of treatment response (ETR)</td>
<td>105</td>
<td>54</td>
<td>70</td>
<td>51</td>
<td>68</td>
</tr>
<tr>
<td>Sustained viral response (SVR)</td>
<td>83</td>
<td>45</td>
<td>58</td>
<td>38</td>
<td>51</td>
</tr>
<tr>
<td>Non-responders</td>
<td>38</td>
<td>18</td>
<td>23</td>
<td>20</td>
<td>27</td>
</tr>
<tr>
<td>Relapsed after successful treatment</td>
<td>18</td>
<td>9</td>
<td>12</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Partial response to treatment</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lost to follow up or outcome unknown</td>
<td>12</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Reinfection</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Death</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
Mortality

• 5 known deaths:
  – 21, 24, 31, 34 and 48 months after treatment finished

• Cause:
  – 1 suicide, 1 septicaemia, 3 unknown

• No deaths in patients who responded to treatment
Disease free survival

- 55% (N=83) of patients achieved SVR
- 54% (N = 45) had repeat HCV RNA testing after completion of treatment
- One reinfection occurred 14 months after completed treatment
HCV in Injectors

• Therapy CAN be given

• People can be cured (and stay cured)
HCV in Injectors

• Therapy CAN be given

• People can be cured (and stay cured)

• This could eliminate HCV!!!
What would happen if we treated all our injectors?
Modelling HCV in treated injectors – what can therapy achieve?

Number treated per year per 1000

Martin et al - Submitted
Modelling HCV in treated injectors – How many do we need to treat to stop the virus spreading?
HCV Models

• If we treat a few patients every year the virus will eventually go away
HCV Models

• If we treat a few patients every year the virus will eventually go away

• New and better treatments are coming
**Daclatasvir + GS-7977 ± RBV: Efficacy Analysis According to Genotype**

**Genotype 1a/1b HCV**

<table>
<thead>
<tr>
<th></th>
<th>Wk 4</th>
<th>Wk 24 (EOT)</th>
<th>SVR4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>100 100 100</td>
<td>87 86 93</td>
<td>100 100 100</td>
</tr>
<tr>
<td>Group B</td>
<td>100 100 100</td>
<td>87 86 93</td>
<td>100 100 100</td>
</tr>
<tr>
<td>Group C</td>
<td>100 100 100</td>
<td>87 86 93</td>
<td>100 100 100</td>
</tr>
</tbody>
</table>

Light: < LOD  
Dark: < LLOQ and detectable

**Genotype 2/3 HCV**

<table>
<thead>
<tr>
<th></th>
<th>Wk 4</th>
<th>Wk 24 (EOT)</th>
<th>SVR4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group D</td>
<td>100 100 100</td>
<td>93 93 86</td>
<td>100 100 100</td>
</tr>
<tr>
<td>Group E</td>
<td>100 100 100</td>
<td>93 93 86</td>
<td>100 100 100</td>
</tr>
<tr>
<td>Group F</td>
<td>100 100 100</td>
<td>93 93 86</td>
<td>100 100 100</td>
</tr>
</tbody>
</table>

Light: < LOD  
Dark: < LLOQ and detectable

mITT analysis, bars not reaching 100% after Wk 4 reflect missing values.

*1 patient required addition of pegIFN-alfa/RBV (tx intensification), 1 patient with relapse at posttreatment Wk 4  
†2 patients lost to follow-up (following Wk 12 and 24 visits).
Eradicating HCV in injectors

• We can eradicate this virus!
HCV in 2012

• Why are we bothered?

• What can we do?

• What should we do?
Eradicating HCV

To eradicate HCV we will need

• Political support
• Funding
• Staying power!
Towards the end of HCV

• If we do nothing the HCV epidemic in our cities will get a lot worse (both in terms of numbers and disease)

• Effective therapies are available and better ones are coming

• We can eliminate this virus – we really can!