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NIHR Research Professor

BHIVA meeting October 2018
The Big Picture

• Scaling up the global response
• The role of microelimination
• The domestic response
• HIV/HCV co-infection as a tail to wag the dog
The Big 3 are now the big 4

(Stanaway et al 2016 Lancet)
HCV is the driver to increases in burden of viral hepatitis

(Stanaway et al Lancet 2016)
Hepatitis C account for 50% of mortality

Mortality rate (per 100,000 py)
- <10
- 10 - 14.9
- 15 - 22.49
- 22.5 - 33.49
- 33.5 +

Proportion attributable to each virus
- The area of each pie is proportional to that region’s hepatitis-attributable mortality rate. The size of each wedge represents the proportion of that mortality attributable to a given virus
- hepatitis_a_pr
- hepatitis_b_pr
- hepatitis_c_pr
- hepatitis_e_pr

(Stanaway et al Lancet 2016)
<table>
<thead>
<tr>
<th></th>
<th>Vaccine</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis A</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Hepatitis E</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
A recognition of the challenge:

Global Viral Hepatitis Strategy 2016-21
Approved WHA May 2016
Setting targets for elimination
Elimination as a Public Health Threat

80% of eligible patients treated for HBV and HCV by 2030

WHO May 2016
But are the HCV targets even feasible?
### Scaling up Intervention

<table>
<thead>
<tr>
<th></th>
<th>GP risk</th>
<th>PWID risk</th>
<th>Treatment</th>
<th>Access</th>
<th>% Diagnosed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basecase</strong></td>
<td>As in 2015</td>
<td>As in 2015</td>
<td>PEG-IFN+RBV</td>
<td>As in 2015</td>
<td>As in 2015</td>
</tr>
<tr>
<td>+ Blood / injection</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>safety</td>
<td></td>
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<td></td>
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<tr>
<td>+ PWID harm reduction</td>
<td>80% reduction</td>
<td></td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ DAAs as treat</td>
<td></td>
<td></td>
<td>DAAs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ DAAs at diag.</td>
<td></td>
<td></td>
<td></td>
<td>All diagnosed</td>
<td></td>
</tr>
<tr>
<td>+ Proactive diag.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>90% by 2030</td>
</tr>
</tbody>
</table>

Heffernan et al Lancet (in press)
Scaling prevention and treatment need to reach targets

- Basecase mortality flat(ish)
- GP and PWID interventions reduce mortality in long term
- DAAs at treatment rates or diagnosis rates improves long term outlook
- Adding ambitious diagnosis scale-up: WHO elimination - 65% reduction by 2034

Heffernan et al Lancet (in press)
Global Targets are (theoretically) achievable

Heffernan et al Lancet (in press)
Global Targets are (theoretically) achievable

Heffernan et al Lancet (in press)
Global Diagnosis of HCV (%)
Egypt launches ‘historic’ anti-hepatitis drive

Nationwide effort to target more than 50 million people in 7 months

Published: 14:54 October 1, 2018
Ramadan Al Sherbini, Correspondent
Progress towards HCV elimination targets (2017)

Slide: Homie Razavi Source: Polaris Observatory
Lancet Commission:

Accelerating the Elimination of Viral Hepatitis

Cooke et al Lancet Gastroenterology and Hepatology, (in press)
A national focus: 80% disease in 20 countries

Cooke et al Lancet GH (in press)
Countries/regions/clinics will move at different speeds

Ensure access to quality treatment

Scale testing and linkage to care

Target hard to reach groups
## National Progress towards elimination

<table>
<thead>
<tr>
<th>Monitor Progress</th>
<th>National plans need clearly defined, measurable objectives</th>
<th>Progress of individual countries needs to be closely monitored towards elimination goals (Polaris, WHO, Creation of Elimination Index)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Develop new indices of national progress</td>
<td>Develop greater capacity for advocacy in high burden regions (all)</td>
</tr>
</tbody>
</table>
Microelimination
What is it?

- Breaking down national elimination goals into smaller goals for individual population segments
- Requires access to diagnosis and treatment for target population
- Requires annual targets and for public reporting of progress

Lazarus et al JHep 2017; Sem Liver Dis 2018
• Large gap between aspiration and reality
• Political will and advocacy crucial to maintain momentum
• Achieving microelimination (even eradication) helps to maintain momentum, investment and focus
Suitable populations?

- Patients with advanced liver disease
- Haemophilia patients
- Prisoners
- Children
- Patients engaged with drug treatment units
- Migrant communities from high prevalence regions
- People who inject drugs in networks
- Men who have sex with men
- Generational cohorts of high prevalence
- Geographically defined areas

- PLWH

Lazarus et al JHep 2017; Sem Liver Dis 2018
HCV in UK: From clinical to public health challenge
Eliminating Hepatitis C in Scotland: A Call to Action

A summary of evidence from the Hepatitis C Elimination Inquiry held by the cross-party Scottish Hepatitis C Parliamentary Champions group and The Hepatitis C Trust

WELSH HEALTH CIRCULAR
Issue Date: 16 October 2017
STATUS: ACTION
CATEGORY: PUBLIC HEALTH
Title: Attaining the WHO targets for eliminating hepatitis (B and C) as a significant threat to public health

Health leaders and politicians call for hepatitis C elimination strategy in Northern Ireland

Press Release · Oct 17, 2017 00:01 BST

- Elected Members of the Legislative Assembly and patient group representatives will meet with leading clinicians and service providers today to discuss the need for a region-wide strategy for the elimination of hepatitis C in Northern Ireland
Ensure access to quality treatment

Scale testing and linkage to care

Target hard to reach groups

Countries/regions/clinics will move at different speeds
England
South
16. Surrey Hepatitis Services
   Royal Surrey County Hospital NHS FT
   Dr Michelle Gallagher

17. Sussex Hepatology Network
   Brighton & Sussex University Hospitals – Royal Sussex County Hospital (RSCH)
   Dr Jeremy Tibble

18. Oxford University Hospitals NHS Trust
   Oxford
   Dr Jane Collier

19. Wessex Hep C ODN
   University Hospital Southampton
   NHS Foundation Trust
   Dr Mark Wright

20. Bristol and Severn
   Hep C ODN
   University Hospitals Bristol NHS Foundation Trust
   Dr Fiona Gordon

21. South West Peninsula Hepatitis C ODN
   Plymouth Hospitals NHS Trust
   Professor Matthew Cramp

22. Kent Network via Kings
   Kings College Hospital NHS Foundation Trust
   Dr Kosh Agarwal

HEP C ODNS AND CLINICAL LEADS
## The run rate approach

<table>
<thead>
<tr>
<th><strong>Pros</strong></th>
<th><strong>Cons</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Contained costs</td>
<td>Were long waits for those approved for treatment (now clearing)</td>
</tr>
<tr>
<td>Delayed implementation while competition increased</td>
<td>Large regional variations in access to care</td>
</tr>
<tr>
<td>Defended legally</td>
<td>Introduced complexity to care without funding</td>
</tr>
<tr>
<td>Managed demand on services and delivered “to time and to target” (94%)</td>
<td>Contributed to negative view of UK from pharma</td>
</tr>
<tr>
<td>Normalised cost as part of clinical discussions</td>
<td>Broken the link between NICE and NHSE</td>
</tr>
<tr>
<td>Depoliticised the issue</td>
<td>Delayed a joined up elimination strategy and case finding for challenged patients</td>
</tr>
</tbody>
</table>
Counting treatments (2018)

Table showing breakdown of WL ODN’s run rate data taken from NHSE’s BlueTeq report

Actuals represent both the run rate figures and the additional slots (153 + 37)
Change will come
What can the HIV/HCV community do?

- Widely available testing and treatment
- High proportion of population diagnosed
- Good data, well characterised epidemic
  Both at clinic, through PHE, other PH bodies
- Patient group engaged in care
- Active and engaged care / research community
  Links to NIHR funding, trials networks
  UK CHIC (MRC)
- Mechanisms in place for monitoring progress
Microelimination Targets
BHIVA Targets
80% of all patients with diagnosed HIV/HCV cured of hepatitis C by April 2019
(with 100% of patients assessed for therapy)

90% of all patients cured of hepatitis C by April 2020

100% of all patients cured of hepatitis C by April 2021
<table>
<thead>
<tr>
<th>Hepatitis C Operational Delivery Network (ODN)</th>
<th>PLHIV with HCV coinfection*</th>
<th>PLHIV without HCV coinfection*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n= 3305</td>
<td>n=75008</td>
</tr>
<tr>
<td>1. North East &amp; Cumbria</td>
<td>33</td>
<td>1308</td>
</tr>
<tr>
<td></td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>2. Greater Manchester &amp; Eastern Cheshire</td>
<td>238</td>
<td>5127</td>
</tr>
<tr>
<td></td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>3. Cheshire &amp; Merseyside</td>
<td>48</td>
<td>1889</td>
</tr>
<tr>
<td></td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>4. South Yorkshire</td>
<td>95</td>
<td>2244</td>
</tr>
<tr>
<td></td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>5. Humberside and North Yorkshire</td>
<td>44</td>
<td>981</td>
</tr>
<tr>
<td></td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>6. West Yorkshire</td>
<td>96</td>
<td>2533</td>
</tr>
<tr>
<td></td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>7. Lancashire and South Cumbria</td>
<td>50</td>
<td>1174</td>
</tr>
<tr>
<td></td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>8. Leicester</td>
<td>56</td>
<td>2197</td>
</tr>
<tr>
<td></td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>9. Birmingham</td>
<td>240</td>
<td>6227</td>
</tr>
<tr>
<td></td>
<td>7%</td>
<td>8%</td>
</tr>
<tr>
<td>10. Nottingham</td>
<td>95</td>
<td>1965</td>
</tr>
<tr>
<td></td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>11. Eastern Hepatitis Network</td>
<td>154</td>
<td>5483</td>
</tr>
<tr>
<td></td>
<td>5%</td>
<td>8%</td>
</tr>
<tr>
<td>12. West London</td>
<td>316</td>
<td>4686</td>
</tr>
<tr>
<td></td>
<td>10%</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>11%</td>
<td>10%</td>
</tr>
<tr>
<td>14. Barts</td>
<td>314</td>
<td>5748</td>
</tr>
<tr>
<td></td>
<td>10%</td>
<td>8%</td>
</tr>
<tr>
<td>15. South Thames Hepatitis Network (STHepNet) Kings &amp; St George's</td>
<td>652</td>
<td>11457</td>
</tr>
<tr>
<td></td>
<td>20%</td>
<td>15%</td>
</tr>
<tr>
<td>16. Surrey Hepatitis Services</td>
<td>76</td>
<td>1912</td>
</tr>
<tr>
<td></td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>17. Sussex Hepatology Network</td>
<td>148</td>
<td>3290</td>
</tr>
<tr>
<td></td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>18. Oxford University Hospitals NHS Trust</td>
<td>70</td>
<td>2438</td>
</tr>
<tr>
<td></td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>19. Wessex Hep C ODN</td>
<td>94</td>
<td>2418</td>
</tr>
<tr>
<td></td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>20. Bristol and Severn Hep C ODN</td>
<td>34</td>
<td>1654</td>
</tr>
<tr>
<td></td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>21. South West Peninsula Hepatitis C ODN</td>
<td>44</td>
<td>1246</td>
</tr>
<tr>
<td></td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>22. Kent Network via Kings</td>
<td>58</td>
<td>1351</td>
</tr>
<tr>
<td></td>
<td>2%</td>
<td>2%</td>
</tr>
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</tr>
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<td></td>
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<td>10%</td>
</tr>
</tbody>
</table>

Estimates vary from 50-100% for patients treated
Prevention
Predicted Impact of scaling up testing and treatment

Martin et al CID 2016
Treatment as prevention

Dutch cohorts: 51% decrease in new infections in 1\textsuperscript{st} year that treatment available

Swiss HIV cohort: evaluating outcome of focused screening and treatment of PLWH

London data (Garvey et al) – suggestion of 75% reduction from peak

Need better data on incidence to set realistic targets

Boerekamps et al CID Apr 2018; Braun et al CID 18; Sulkowski CID 18; Garvey et al (in progress)
Emerging factors

Reinfection increasingly high proportion of new infections

Amongst MSM, international networks emerging as important factor

Prevention will need to be given increasing priority

Boerekamps et al CID Apr 2018; Braun et al CID 18; Sulkowski CID 18; Garvey et al (in progress)
Generics needed again?
Viraemia = 134 on 1.1.2016
Case study

- 35 year old female
- Actively injecting, living rough
- Heavy alcohol intake
- Admitted to SMH and diagnosed with TBM 2016
- Started TB treatment, new diagnosis HIV, commenced HIV therapy
- Diagnosed with HCV, 3a
- Assessed for therapy
- Transferred to supportive hostel for TB treatment
- Last week arrested en route to hospital for appointment
• We need to drive this

• We need to be collaborative

• We need to imagine new models of care for individual patients

• We will need a greater emphasis on prevention going forward

• We shouldn’t expect any money for it (though obviously it would be nice)
Thank you

IHME, Seattle
Mohsen Naghavi
Abraham Flaxman
Jeff Stanaway
Theo Vos
GBD Collaborators

WHO
Nathan Ford
Stefan Wiktor

Microhaart
Andrew Hill

MRC Clinical Trials@UCL
Sarah Walker
Sarah Pett
STOP HCV1 Trial team

PHE
Sema Mandal
Noel Gill
Alison Brown
Ruth Simmons
Peter Kirwan

Lancet Commissioners

STOPHCV consortium

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Imperial College/ICHT
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Ashley Brown
Mark Thursz
Mark Nelson
Chris Jones
Bryony Simmons
Ella Barber
Anjna Badhan
Michael Wood

RFH
Sanjay Bhagani
Collette Smith

Vietnam
Guy Thwaites
Jeremy Day

Q &A