Testing Strategies for HIV and HCV: similarities and differences

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Disclosures

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Objectives

• Compare cascades of care
• What has been done so far?
• Universal vs. targeted testing
• HIV & HCV screening in the UK  
  – Where to test
• How will testing affect the epidemic?
35.0 million living with HIV/AIDS worldwide 1.5 million deaths
130–150 million people globally have chronic HCV infection, and 350,000 to 500,000 people die each year.

EU: 3.7 million RNA+ (viraemic) HCV infections
13.3 million HCV Ab+ in all Europe
Deaths attributable to HIV and Hepatitis in Western Europe

- A relatively higher burden of HIV-related mortality until 1995
- HIV mortality declines from 2000 onwards
- HCV deaths increasing

Global Burden of Disease Study: Cowie et al J Hep 2014;60 (Suppl 1):O86
HIV care cascade - WHO target

THE TREATMENT TARGET

90% diagnosed
90% on treatment
90% virally suppressed

WHO consolidated guidelines on HIV testing services. July 2015.
HIV care cascade - UK

- **76%** diagnosed
- **90%** on treatment
- **90%** virally suppressed

HCV care cascade in the UK

‘The great unknown’

- Diagnosed: \( \sim 50\% \)
- On treatment: 3%
- SVR: 63%

214,000 with HCV\(^1\)
\(~100,000\) diagnosed

6000 per year\(^2\)

HIV/HCV cascades: failing to diagnosed 90%

.... screening is the first step...
HIV - where does testing happen in the UK?
UK HIV testing summary

- HIV seroprevalence data underpins testing strategies
- HIV testing occurring (hospital/community)
- Tailor testing methods to the setting: oral swabs/rapid tests in outreach/STI vs. serology in ante-natal or the ED
- De-exceptionalising HIV testing is important in non-traditional settings
- Staff perceptions affect successful implementation
- Sustainability is a key challenge in non-traditional settings such as the ED/MAU/ITU
- HIV testing has moved beyond non-traditional settings into ‘DIY’ testing
HCV screening in Europe

- Literature review
- HCV AB+ in Europe 0.4-5.2%
- Populations:
  - General population
  - First time blood donors
  - Pregnant women
  - PWID’s
  - MSM
  - Migrants
- HCV Ab screening is cost effective
  - PWIDS (ICER/QALY 3000-42000)

Hahne et al, BMC Infectious Dis 2013; 13:181
UK Epidemic: Ethnicity

Proportion testing positive for HCV-Ab by ethnicity in sentinel laboratories in the South East, 2010-2014

UK Guidelines HCV Testing = targeted testing

**At-risk populations:**

- PWID (about 90% being tested)
- Prisons (8% of receptions tested within 30 days)
- Immigration centres
- ‘Promote’ in GUM to those at high risk

Global prevalence of HCV

Generalised epidemic = universal screening

- Targeted testing not helpful
- Universal approach
US HCV: screening amongst ‘baby-boomers’

- Prevalence in this cohort > 3%
- One time ‘birth cohort’ screening if born 1945–65
- Highly cost-effective

Centers for Disease Control and Prevention. MMWR 2012;61:1–33.
Differences in testing in the UK

HCV

HIV
Are we missing HCV cases?

Sero-prevalence surveys are helpful
HCV in the US ED

- Disproportionately affected HCV populations identified:
  - People of colour
  - Medicaid recipients
  - Uninsured

- Same populations are known to be disproportionate users of ED care

Table 2: Relative odds for visit being HCV-related (vs. non-HCV) associated with race and Medicaid status*

<table>
<thead>
<tr>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>Ref</td>
<td>Ref</td>
<td>Ref</td>
</tr>
<tr>
<td>Non-white</td>
<td>1.04 (0.58, 1.87)</td>
<td>1.43 (0.87, 2.34)</td>
<td>2.49 (1.60, 3.86)</td>
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<tr>
<td>Non-Medicaid</td>
<td>Ref</td>
<td>Ref</td>
<td>Ref</td>
</tr>
<tr>
<td>Medicaid</td>
<td>1.49 (0.80, 2.80)</td>
<td>3.54 (2.44, 5.14)</td>
<td>3.49 (1.79, 6.80)</td>
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</tbody>
</table>

*Results from the logistic regression were adjusted for age and sex

US: birth cohort screening in two busy EDs >60,000 attendances/year
HCV Ab prevalence by site

Houston, Texas

Birmingham, Alabama

Numbers tested for HCV-Ab and proportion positive by service type in London

- **Sentinel laboratories in London, 2009 to 2013** (do not represent all tests across London.)

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High prevalence of HCV viraemia in London ED: Should we be screening for HCV in ED attendees?

Aim:
- To estimate the HCV prevalence in ED attendees.

Results:
- HCV Ab prevalence: 2.6% (26/997)
- HCV RNA + 1.2% (12/997)
- 75% (9/12) RNA+ were aged 25-54yr
- 4.8% (3/63) HCV RNA+ males 35-44 yrs
- 58% of HCV RNA+ white British (1/3 of attendees were white British)
Is antenatal screening for hepatitis C virus cost-effective? A decade's experience at a London centre

Background:
• Current UK guidelines do not support routine antenatal screening for HCV

Methods:
• Review ANC HCV testing (2003-13).

Results:
- 35,455 ANC
- HCV Ab+ : 136 (0.38%) (44 HCV RNA+)
- 3 vertical transmissions Ab+ (6.8%) in newly diagnosed mothers
- Intervention cost-effective on MONARCH [< 20-30,000 NICE willingness-to-pay cut-off]

HIV vs. HCV testing
BBV testing in UK & Irish EDs

- Dublin ED
- Going Viral : 9 UK ED testing week

1 in 4 people attend ED in England annually, 13% of attendees have bloods taken, making it a good place to test

A universal testing programme for blood borne viruses in an urban ED – a call for more widespread ED testing in Ireland

Methods:
- Opt out BBV (HIV Ab, Hep BsAg, HCV Ab) screening as routine care
- Targets for uptake set for each month
- 5299 patients were screened over 20 weeks and analysed

Results:
- Target of 50% was achieved

1. Number of Diagnoses

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>New diagnoses</th>
<th>Previously known</th>
<th>Prevalence rate of new diagnoses (per 1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV</td>
<td>63</td>
<td>6</td>
<td>57</td>
<td>1.13</td>
</tr>
<tr>
<td>HBV</td>
<td>25</td>
<td>12</td>
<td>13</td>
<td>2.25</td>
</tr>
<tr>
<td>HCV</td>
<td>287</td>
<td>44</td>
<td>243</td>
<td>8.3</td>
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</table>
Linkage to care

Linkage to Care subsequent to diagnosis (New and previously known patients)

<table>
<thead>
<tr>
<th></th>
<th>Known</th>
<th>New</th>
<th>Now linked</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV</td>
<td>57</td>
<td>6</td>
<td>62 (98.4%)</td>
</tr>
<tr>
<td>HBV</td>
<td>13</td>
<td>12</td>
<td>24 (96%)</td>
</tr>
<tr>
<td>HCV</td>
<td>243</td>
<td>44</td>
<td>227 (79%)</td>
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• The majority (79%) of patients with known Hepatitis C are now re-linked to care as a result of the study team intervention.
• Those with newly diagnosed Hepatitis C are being actively followed up on an ongoing basis.
Conclusions

• 50% uptake achieved

• Unexpectedly high rates of new diagnoses for both HCV and HBV

• Overall prevalence
  – HIV 11.9/1000
  – HBV 4.7/1000
  – HCV 54.2/1000

• Linkage to care rates >79%

• Recommend roll-out ‘to widespread ED testing in urban areas and General practice’.

• This roll-out has begun

The first BBV testing week
Routine HIV/HBV/HCV testing in 9 UK ED’s 13-19 October 2014

Methods:
• 16 EDs high HIV prevalence EDs approached, 9 took part
• Routine testing for > 18 yrs ED attendees having bloods as part of routine care
• HIV Ab, HBV S Ag & HCV Ab were tested - confirmed by neutralisation and PCR
• Excluded: lacking capacity/ language barrier/ already positive

Consent: like ANC No written consent needed
“As you’re having a blood test to look at how your liver and kidneys are working, this week we are also screening for infections including HIV and Hepatitis. Is that ok?”
Those aged 25-54 had the highest prevalence: HCV 2.46%, HIV 1.36% and HBV 1.09%
Conclusions and roll-out

- Universal testing in the ED identified 32 new infections over seven days.
- Testing for HIV alone would have missed 54 viral Hepatitis diagnosis (45% new).
- This week-long pilot supports further evaluation of routine BBV testing in UK EDs.
- BBV testing at RLH ED since 20/11/2015 with RNA confirmation (Gilead fellowship grant).

HepFree

• Controlled randomised cross-sectional cluster trial to assess the impact of
  – Identifying
  – Screening
  – treating immigrants with viral hepatitis
• Based in East London, South London, Bradford

• “Elevator Pitch”
  – How do we get GPs to test ethnic minorities for viral hepatitis?
  – How do we treat & engage patients who test positive?

Foster, G.R Principal Investigator
Impact of screening: Modelling

0.3% HCV viraemic, 90% IVDU after 1996

Age-Distribution 2013

HCV Viraemic Individuals 1950-2030

Modelling (CDC, Colorado)

• Base Case Scenario 2013
• Stepwise ↑ in Treatment
• > F2 until 2016, F1 in 2018

Cramp et al, BMC GE 2014;14:37
Impact of screening: Modelling

Main Messages:

• If treatment continues as it did, liver-related mortality would \(\uparrow\) by 90% in 2030
• Treatment Stepwise \(\uparrow\) in Treatment with DAA’s by 115% until 2018: a 50% in liver-related mortality by 2020
• **Would require an \(\uparrow\) in diagnosis by 140% by 2018**

Cramp et al, BMC GE 2014;14:37
HCV treatment as prevention evaluation

Potential Goal of Eradication

Potential Populations

- Community-based PWID
- Prisoners
- HIV+/HCV+ co-infected
- Antenatal
- Hospitalised

TASP
HCV treatment as prevention in HIV/HCV

Primary objective
• To evaluate the impact of a rapid scale-up of DAA HCV treatment on HCV transmission in HIV+

Primary endpoint
• Change in HCV incidence from pre- to post- scale-up of IFN-free HCV treatment

Study progress / feasibility
• Observational database of HIV/HCV patients commenced (n=180/1,000)
• Education programs developed for HIV primary care prescribers
• Broad and targeted HCV treatment strategies in development
• Surveillance systems and HCV reinfection cohort plans in development

Pbac positive recommendations. March 2015.
Is HCV testing in the ED cost-effective?

Need more data on who the positives are and whether they are viraemic
Blood-borne viruses, better together
Blood-borne viruses, better together
Thanks

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