School of Medicine
University of Dundee

Improving access to HCV treatment for hard to reach populations

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Declaration of Financial Interests or Relationships

Speaker Name: Prof John F Dillon

I have the following financial interest or relationships to disclose with regard to the subject matter of this presentation:

• Grant/research support: AbbVie, Bristol-Myers Squibb, Boehringer Ingelheim, Gilead Sciences, GlaxoSmithKline, Janssen, Merck Sharp & Dohme, Roche

• Speakers Bureau: AbbVie, Bristol-Myers Squibb, Boehringer Ingelheim, Gilead Sciences, GlaxoSmithKline, Janssen, Merck Sharp & Dohme, Roche
Why change our Hospital based model of care
The continuum of viral hepatitis services and the retention cascade

The global cascade of care for chronic HCV infection in 2015


doi:10.1038/nrgastro.2017.98
SVR associated with reduced hazard for a range of hepatic and non-hepatic events in Scotland (N=3,385) (Innes et al. Hepatology 2015)

Mortality
- Liver
- Non-Liver
- All-cause
- Severe Liver
- Cardiovascular
- Respiratory
- Neoplasms

Morbidity
- Alcohol
- Drug
- Violence

Reduced hazard for behavioural events is consistent with SVR patients leading healthier lives

Hazard Ratio (95% CI) for SVR vs non-SVR*

* Adjusted for age, sex, medical comorbidites, genotype, behavioural factors, liver function tests.
Stigma, Barriers, fear, inflexibility, distance, travel costs, lack of self worth, nihilistic view of future, Ignorance

Loss of the benefits of HCV treatment engagement beyond liver health
If the Mountain of patients won’t come to treatment

We must take treatment to the patients to achieve elimination
Out Reach & In reach services
Nurse led services

Shortening the distance

Moving conventional Out-patient services to Locality

→ Usually partial

→ Community health centres

→ Mobile vans

→ Sometimes collocated with addictions facilities
   
   → Still new faces
   
   → A new environment
Treatment - no one “best” model of care
What do you need to treat HCV?
What do you really need to cure HCV?
Current Tayside practice
But can be varied to suit the patient

1. Diagnosis made on DBS (HCV ab and PCR, HIV, HBV) or venepuncture by non specialist, referred by who ever did the test

2. Visit 1 Seen by Nurse specialist (or the Community Pharmacist who did the DBS)
   1. Protocol history (age and alcohol history)
   2. Bloods for FBC, LFTs, Fib 4, HCV PCR if not possible before,
      1. Genotype (only if cost difference)
      2. Start treatment

3. Visit 2 Start Treatment/pick up treatment if not already done so

4. Virtual review of results, decide if ultrasound/fibroscan/duration of treatment/follow up

5. Visit 2 SVR
How do you deliver addiction care

Wide variety of
- 1. addictive substances and treatments
- 2. models of care

Key questions
- Where are the patients already attending
- Who is already seeing them

They have already overcome the barriers
General practices, community health centres, and pharmacies

Community health Centres- site for outreach
General Practice-family practioners, primary medical care
  Often in community health centres
Addictions treatment centres
  Pharmacies for dispensing
Needle exchanges
General Practice
Telemedicine, MCNs, virtual MDTs

Marked geographical variation in HCV prevalence with deprivation status in a practice area, varying from 0.1 to 3%

Should approaches be tailored to local circumstances?

GPs who provide addictions services
General Practice Identified Rates of Hepatitis C

Rate of Patients with a previous diagnosis of Hepatitis C in Dundee CHP practices participating in the BBV program per 1,000 registered patients
Addictions services and Pharmacies

Addictions treatment centres

A site for out reach, an opportunity for addictions specialists

Who are your addictions specialists, what background

Who dispenses OST and where
## Preferences for Hepatitis C Testing: Application of a Discrete Choice Experiment with Methadone Users in Tayside, Scotland

<table>
<thead>
<tr>
<th>Preference</th>
<th>Willing to Wait</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own rather than other pharmacy</td>
<td>4.25 weeks</td>
</tr>
<tr>
<td>Own pharmacy rather than GP</td>
<td>2.11 weeks</td>
</tr>
<tr>
<td>Own pharmacy rather than drug worker</td>
<td>0.08 weeks</td>
</tr>
<tr>
<td>Treated with respect</td>
<td>7.42 weeks</td>
</tr>
</tbody>
</table>
Community pharmacy

A key role in opioid substitution therapy and a local community resource

Specialist prescribing or GP prescribing

→ Drug treatment centres specialist assessment

→ Some dispensing

→ Especially for early or unstable patients

Dispensing in community pharmacy

→ Daily

→ Twice or thrice weekly

→ Weekly
Community pharmacy

Locality
→ Distance 0.5 km average Scottish urban location
→ Across Scotland, average 20 minutes travelling time
→ Normally ‘in the high street’

Commercial
→ Companies, franchises, own business
   → So some leadership from pharmacists, some from commercial entities
→ Wide range of medical and personnel care products
→ Contractual payments for care
→ ‘Prescription for Excellence’

Highly trained healthcare professional on site
Dried blood spot testing in Tayside, Scotland

A quasi-experimental evaluation of DBST through community pharmacies in the Tayside region of Scotland

<table>
<thead>
<tr>
<th>Pharmacy site</th>
<th>Number of eligible patients</th>
<th>Number of tests taken (% of eligible patients)</th>
<th>Number of positive tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>23</td>
<td>13 (57)</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>22</td>
<td>11 (50)</td>
<td>4</td>
</tr>
<tr>
<td>C</td>
<td>30</td>
<td>5 (17)</td>
<td>3</td>
</tr>
<tr>
<td>D</td>
<td>26</td>
<td>10 (38)</td>
<td>1</td>
</tr>
<tr>
<td>E</td>
<td>26</td>
<td>3 (12)</td>
<td>1</td>
</tr>
<tr>
<td>F</td>
<td>16</td>
<td>1 (6)</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>143</td>
<td>43 (30)</td>
<td>12</td>
</tr>
</tbody>
</table>

The OR for increased uptake of testing within the 6 pharmacies was 2.25 (95% CI 1.48 to 3.41, Z statistic = 3.81 p = <0.0001) in comparison to the other services
HCV testing and treatment in 8 community pharmacies

DOT-C: A pilot cluster randomised controlled trial

Pharmacist-led

Patient cohort
285 untested

Standard of care

89 DBST

29 reactive tests

3 treated

63 DBST

11 reactive tests

1 treated
DOT-C: waterfall plot of treatment attrition

- Number of patients: Conventional pathway > Pharmacist-led pathway
- DBST taken: Conventional pathway > Pharmacist-led pathway
- Reactive tests: Conventional pathway > Pharmacist-led pathway
- Did not attend: Conventional pathway > Pharmacist-led pathway
- Genotype 3: Conventional pathway > Pharmacist-led pathway
- Spontaneous clearance: Conventional pathway > Pharmacist-led pathway
- Treated: Conventional pathway > Pharmacist-led pathway
Pharmacy pathway vs conventional pathway: cost-effectiveness analysis

<table>
<thead>
<tr>
<th>Stage</th>
<th>Reason</th>
<th>Activity (estimated staff time hrs)</th>
<th>Cost (per activity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pharmacy attendance for methadone</td>
<td>Pharmacist (0.33)</td>
<td>£17</td>
</tr>
<tr>
<td>2</td>
<td>DBS test in pharmacy</td>
<td>Pharmacy assistant (0.33)</td>
<td>£3</td>
</tr>
<tr>
<td>3</td>
<td>Assessment blood tests</td>
<td>Specialist nurse (0.33)</td>
<td>£25</td>
</tr>
<tr>
<td>4</td>
<td>Patient assessment in pharmacy</td>
<td>Pharmacist (0.5)</td>
<td>£25</td>
</tr>
<tr>
<td>5</td>
<td>Prescription</td>
<td>Pharmacist prescriber (band 8a) (0.5)</td>
<td>£25</td>
</tr>
<tr>
<td>6</td>
<td>Outpatient review (SVR test)</td>
<td>Specialist nurse (0.33)</td>
<td>£25</td>
</tr>
<tr>
<td>7</td>
<td>Discharge from service</td>
<td>Specialist nurse (0.33)</td>
<td>£25</td>
</tr>
<tr>
<td></td>
<td>Total pathway cost</td>
<td></td>
<td>£238</td>
</tr>
<tr>
<td></td>
<td>Staff cost</td>
<td></td>
<td>£143</td>
</tr>
<tr>
<td></td>
<td>Testing cost</td>
<td></td>
<td>£95</td>
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</table>

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<th>Cost (per activity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DDBS test</td>
<td>Specialist nurse (0.33)</td>
<td>£41</td>
</tr>
<tr>
<td>2</td>
<td>Outpatient appointment</td>
<td>Specialist nurse (0.66)</td>
<td>£83</td>
</tr>
<tr>
<td>3</td>
<td>Outpatient appointment</td>
<td>Ultrasonographer (0.5)</td>
<td>£20</td>
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<tr>
<td>4</td>
<td>Appointment Medical Clinic</td>
<td>Consultant (0.5)</td>
<td>£69</td>
</tr>
<tr>
<td>5</td>
<td>Radiology appointment</td>
<td>Ultrasonographer (0.5)</td>
<td>£20</td>
</tr>
<tr>
<td>6</td>
<td>Medical Clinic appointment</td>
<td>Consultant/Registrar (0.33)</td>
<td>£24</td>
</tr>
<tr>
<td>7</td>
<td>Outpatient Clinic appointment</td>
<td>Specialist nurse (0.5)</td>
<td>£63</td>
</tr>
<tr>
<td>8</td>
<td>Prescription</td>
<td>Pharmacist prescriber (8a) (0.5)</td>
<td>£36</td>
</tr>
<tr>
<td>9</td>
<td>Outpatient review</td>
<td>Specialist nurse (0.33)</td>
<td>£41</td>
</tr>
<tr>
<td>10</td>
<td>Outpatient review</td>
<td>Specialist nurse (0.33)</td>
<td>£41</td>
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<td>£41</td>
</tr>
<tr>
<td>15</td>
<td>Discharge</td>
<td>Specialist nurse (0.33)</td>
<td>£41</td>
</tr>
<tr>
<td></td>
<td>Total pathway cost</td>
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<td>£933</td>
</tr>
<tr>
<td></td>
<td>Service cost</td>
<td></td>
<td>£643</td>
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<tr>
<td></td>
<td>Testing cost</td>
<td></td>
<td>£290</td>
</tr>
</tbody>
</table>
A phase 3 cluster RCT of pharmacist-led vs standard of care testing and treatment of HCV

Pharmacist-led

Patient cohort
1800 methadone users

Standard of care

30 community pharmacies assess and treat

180 genotype 1
180 genotype 3

30 community pharmacies refer and treat

Ledipasvir/sofosbuvir

180 genotype 1

Sofosbuvir + daclatasvir

180 genotype 3

Objective to treat
300 patients

ClinicalTrials.gov identifier: NCT02706223

RCT: randomised controlled trial
Eradicate HCV project: Needle exchange based treatment

- Engage PWID at needle exchange centres in Tayside
- Incentivise suitable participants to comply with treatment
- 42 months into project; 105/125 eligible patients agreed to participate

<table>
<thead>
<tr>
<th>Consent</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Received treatment</td>
<td>94</td>
</tr>
<tr>
<td>Spontaneous resolver</td>
<td>3</td>
</tr>
<tr>
<td>Lost to follow-up</td>
<td>4</td>
</tr>
<tr>
<td>Stabilised drug use</td>
<td>2</td>
</tr>
<tr>
<td>Died prior to treatment</td>
<td>1</td>
</tr>
<tr>
<td>Prison prior to treatment</td>
<td>1</td>
</tr>
</tbody>
</table>

SVR12: sustained virological response 12 weeks after the end of treatment

- Genotype 1: 88%
- Genotype 2 and 3: 93%
HCV testing and treatment pathways for the PWID and OST populations

Standard HCV testing and treatment to all at risk of HCV

Enhanced HCV testing and treatment service targeting PWID

Primary/secondary care

At risk patients offered venous blood test by physician

OST clients offered DBS test by pharmacist

HCV therapy provided in secondary care by specialist nurse-led clinics in 1 hospital and 18 outreach clinics

Pharmacies

Drug treatment centres

OST clients offered DBS test by trained addiction worker

HCV therapy provided by specialist nurse-led or pharmacist-led clinics

Prisons

Prisoners offered test on admission by prison nurse

HCV therapy provided by specialist nurse-led clinics

Needle exchange

Clients offered DBS test by trained needle exchange staff

HCV therapy provided by specialist nurse-led clinics at the 4 fixed site needle exchange sites

PWID defined as those who either (a) are currently injecting drugs, (b) have ever injected drugs and are currently on opioid substitute therapy, or (c) have ever injected drugs and are currently in prison.

DBS: dried blood spot; OST: opioid substitution therapies; POC: point of care; PWID: people who inject drugs
Empirical social network of PWID

200 %
SVR

8,100 %
SVR
Acknowledgements

The Team - Jan Tait, Brian Stephens, Dianne Knight, Farsana Ahmed, Andrew Radley, Linda Johnston, Shirley Cleary, Christian Sharkey, Morgan Evans, Sarah Inglis, Lewis Beer, Chris Bryne, Amy Malaguti, Steve McSwiggan, James Flood, Donna Thain, Ann Eriksen

Collaborators - Matt Hickman, Peter Vickerman, Natasha Martin, Jeff Lazarus, Margaret Hellard, Joe Doyle, Sharon Hutchinson, David Goldberg