Eliminating Hepatitis C by 2030

Enhancing Prevention, Care and Treatment Among People who Inject Drugs

Professor Margaret Hellard
Disclosures

• I receive fellowship support from the National Health and Medical Research Council (Australia).
• The Burnet Institute receives infrastructure support from the Victorian Government Operational Infrastructure Fund.
• Gilead Science
• Abbvie
• BMS
Acknowledgements

Burnet
• Joe Doyle, Alisa Pedrana, Amanda Wade, Nick Scott, Rachel Sacks Davis, Bridget Draper, Caitlin Douglas, Bridget Williams, Mellissa Bryant, Jess Howell

The Alfred Hospital
• Janine Roney and team

St Vincent's Hospital
• Alex Thompson, David Iser
Overview

• Brief overview of hepatitis C epidemiology
• WHO Elimination targets
• Importance of treating people who inject drugs to achieve elimination
• Importance of a multipronged approach to elimination
• Other things needed to achieve elimination
Hepatitis C epidemiology
An estimated 69.6 (61.4 – 78.1) million individuals were HCV+ with an overall prevalence of 1.0% (0.8%- 1.1%) in 2016.

Source: Polaris Observatory (http://www.polarisobservatory.org/)
HCV epidemiology – increasing burden

Between 1990 and 2013, global viral hepatitis deaths increased (0.89 million to 1.45 million)

Years of life lost and years lived with disability also increased

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Stanaway., 2016

World Health Organisation, 2015
Global prevalence of injecting drug use (IDU)

- IDU in 179/206 countries, prevalence estimates available in 89 countries
- ~15.6 million PWID aged 15-64 years globally (0.33%)
- Prevalence of IDU far higher among men than women in all regions
- Highest IDU prevalence: Georgia and Seychelles
- Largest proportion of IDU population: Russia, USA and China

Global prevalence of hepatitis C virus in PWID

- Globally ~52.3% of PWID have been exposed to HCV (8.2 million)
- In most regions and countries around half of PWID have been infected with HCV

Hepatitis C elimination
Optimism of direct acting antivirals

Simpler, safer and more effective

Elimination has become achievable
Post-2015 Development Agenda

Sustainable Development Goals (SDGs)

Goal 3. Ensure healthy lives and promote well-being for all at all ages

• 3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

Universal health coverage - another key component of the SDGs - achieved when all people receive the health services they need, which are of sufficient quality to make a difference, without those people incurring financial hardship.
WHO

Vision:
A world where viral hepatitis transmission is stopped and everyone living with hepatitis has access to safe, affordable and effective care and treatment.

Goal:
Eliminate viral hepatitis as a major public health threat by 2030
WHO targets for reducing new infections and stopping deaths
Achieving the 2030 targets

Diagnosis
- 90% of chronic infections diagnosed

Treatment
- 80% of eligible persons with chronic HCV treated

Harm reduction
- Number of sterile needles and syringes provided per person who injects drugs per year - increase from 20 to 300. Estimated to be 75% coverage
- No specific number for increasing coverage for opioid substitution therapy
Importance of treating people who inject drugs to achieve elimination
Prevention impact results: prevalence reductions at 10 years

Martin et al 2012
Hepatology
Model Extended

If future treatments cost $50,000 USD per course, annual scaled-up rates would require:

- Edinburgh: **$3.2 million** USD annually
- Melbourne & Vancouver: ~**$50 million** USD annually
The role of the injecting network on hepatitis C transmission
Treating injecting networks – treat your friend strategy
Modelling the impact of treatment on prevalence at 10 years; 80% SVR

Hellard et al Hepatology 2014
Australia – what is required to eliminate hepatitis C

HCV-related liver disease among current and former PWID in Australia
Projected outcomes 2015-2030 under different treatment scenarios

- **No treatment available**

- **Treat PWID to hit WHO incidence target**: treating 4,725 IDU-acquired infections per year (59/1000 PWID per year)

- **Treat advanced liver disease to hit WHO mortality target**: treating 5,662 (30/1000 IDU-acquired infections) per year

- **Treatment to hit both WHO targets**: treating 4,725 IDU-acquired infections per year + 5,564 late liver disease per year for five years

Scott et al
Gut 2016
Australia – what is required to eliminated hepatitis C

Scott et al
Gut 2016

Reduce transmissions
Stop deaths
The importance of data – you need to have some idea of your numbers to know what the job entails and whether you are making progress

2015

~222,000 people living with chronic HCV
2015

~222,000 people living with chronic HCV

~93,000 PWID

~40-50% of PWID live with HCV
2015

~222,000 people living with chronic HCV

~93,000 PWID

~40-50% of PWID living with HCV

41k people in prison

~31% of people in prison living with HCV

~45% of people in prison report recent injecting drug use
2015

~222,000 people living with chronic HCV

~93,000 PWID

~93,000 PWID

~50% of OST patients living with HCV (?)

~36% of people in prison report OST

41k people in prison

>48k people on OST

~57% of OST patients report recent injecting drug use
PWID respond well to treatment
Clinical trials: DAA outcomes in OST patients

<table>
<thead>
<tr>
<th>Treatment</th>
<th>OST (No OST)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBV/PTV/r + DSV + RBV</td>
<td>94%/96% 140/149</td>
</tr>
<tr>
<td>SOF/LDV ± RBV²</td>
<td>96%/98%</td>
</tr>
<tr>
<td>SOF/VEL³</td>
<td>96%/96%</td>
</tr>
<tr>
<td>SOF/VEL/VOX⁴</td>
<td>96%/96%</td>
</tr>
<tr>
<td>GLE/PIB⁵</td>
<td>96%/98%</td>
</tr>
</tbody>
</table>

Clinical trials: DAA outcomes in current PWID

OST with drug use (CO-STAR study)

- GZR/ELB: 92% (269/296)

Current PWID (SIMPLIFY study)

- SOF/VEL: 94% (97/103)

Former/recent PWID - “real-world”

<table>
<thead>
<tr>
<th>Study</th>
<th>SVR12 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norton 2016¹</td>
<td>96%</td>
</tr>
<tr>
<td>Hull 2016²</td>
<td>89%</td>
</tr>
<tr>
<td>Conway 2016³</td>
<td>95%</td>
</tr>
<tr>
<td>Bouscaillou 2017³</td>
<td>88%</td>
</tr>
<tr>
<td>Powis 2017⁴</td>
<td>87%</td>
</tr>
<tr>
<td>Read 2017⁵</td>
<td>82%</td>
</tr>
</tbody>
</table>

Reinfection – should not stop treatment of PWID

United States – a number of jurisdictions have restricted DAA access based on drug use

Barua et al Ann Int Med 2015
76% (n=26) of countries had no drug or alcohol use restrictions

J Lazarus et al 2017
Australia – treatment became available for everyone

- No restrictions on diseases stage
- No restrictions on drug or alcohol use
- Prescription – specialists and other doctors
- Treatment available in prisons
Other countries aiming for elimination where PWID are a large proportion of those with hepatitis C

**Georgia**
- Around 3.7 million people; HCV prevalence ~5.16%
- Mixed epidemic
- April 2015 – Georgian government launched a plan to eliminate hepatitis C by 2020
- Sofosbuvir supplied by Gilead
- 1.2 million screened; 775,000 unique individuals
- 94,000 antibody positive (12.1%)

**Iceland**
- Ministry of Health announces HCV elimination – 7th October 2015; sofosbuvir/ledipasvir provided by Gilead - TrapC
- HCV prevalence – 0.3%
- Approximately 800 – 1000 people with chronic HCV infection
- Mostly PWID
Major hurdle globally – the price of treatments

5g of Diamonds
25 1-carat @ $2000 each
Cost = $50,000

5g of Daclatasvir
12 weeks @ 60mg/day
Cost = $50,000 (UK price)

MEDICINES SHOULDN’T BE A LUXURY

Sofosbuvir
US$ 1 000 per pill

Gram for gram, this hepatitis C drug is 67 times more expensive than gold
But prices falling rapidly

Listed price for a 12-week course of sofosbuvir/ledipasvir in selected countries

Price of a 12-week course in USD:

- USA (NADAC): $91,589
- Denmark: $72,232
- Latvia: $69,610
- Saudi Arabia: $66,441
- Norway: $61,709
- Germany: $61,662
- USA (Veteran): $56,700
- Argentina: $54,056
- United Kingdom: $50,285
- Canada (Quebec): $50,272
- Sweden: $48,793
- France: $31,292
- Spain: $15,264
- Australia: $5,799
- Egypt: $900
- India: $307

A Hill et al IAS 2017
Treatment alone is not going to achieve elimination
Treatment access is just part of the problem

HCV antibody diagnosed: 85%
HCV RNA diagnosed: 50-70%
HCV assessed: 25-50%
Liver disease assessed: 15-30%
Treatment: 10-15%
Cure: 5-10%

Recent initiation of HCV treatment, 2012-2016

* among those assessed as eligible for treatment

Maher, Iverson et al World Hepatitis Summit 2017
2015

~222,000 people living with chronic HCV

~93,000 PWID

~93,000 PWID

~50% of OST patients living with HCV (?)

~36% of people in prison report OST

41k people in prison

>48k people on OST

~57% of OST patients report recent injecting drug use
2015

~220,000 people living with chronic HCV

- ~93,000 PWID
- ~43k PWID with HCV
- 6-10k new infections

- 2k people treated
- ~500-1000 PWID treated
2016

~195,000 people living with chronic HCV

35k people treated

~8400 PWID treated

6-10k new infections

~93,000 PWID

~43k PWID with HCV
2017

~180-185,000 people living with chronic HCV

~6-10k new infections

~22-24k people treated

~5500 PWID treated

~93,000 PWID

<43k PWID with HCV
~180-185,000 people living with chronic HCV

~93,000 PWID

~50% of OST patients living with HCV (?)

~36% of people in prison report OST

41k people in prison

>48k people on OST

~57% of OST patients report recent injecting drug use
Multipronged approach
Prevention – high quality harm reduction
10 YEAR RELATIVE PREVALENCE REDUCTIONS WITH COMBINING OST/NSP/TREATMENT: NO BASELINE COVERAGE OF OST/NSP AND USING DAAs

20% chronic prevalence

40% chronic prevalence

60% chronic prevalence

Large (>40%) reductions in prevalence require treatment in all settings

Martin NK, Hickman M, Hutchinson SJ, Goldberg DJ, and Vickerman P. Combination interventions to prevent HCV transmission among people who inject drugs: modelling the impact of antiviral treatment, needle and syringe programmes, and opiate substitution therapy. Clinical Infectious Diseases 2013
Needle and syringe programs (NSPs)

- 93/179 countries had some level of NSP services
- Data on coverage available for 57 countries
- Coverage among PWID was low (<100 needle-syringes per PWID per year)
- Globally ~33 needle-syringes distributed via NSP per PWID annually

Opioid substitution therapy (OST)

- 86/179 countries had OST implementation
- Data on coverage available for 60 countries
- OST coverage low (<20 OST recipients per PWID per year)
- Globally ~16 OST recipients per 100 PWID

Figure 3: Global coverage of opioid substitution therapy among people who inject drugs
OST=opioid substitution therapy, PWID=people who inject drugs.

Combination coverage of NSPs and OST for PWID

- <1% of PWID live in countries with high coverage of both NSP and OST (e.g. Australia, Netherlands)
- Three largest regions of PWID (east and southeast Asia, eastern Europe and North America had poor coverage of NSP and OST)
- Rapid scale up needed

Increase testing
Regular testing is required

Annual HCV incidence

- Treatment scale-up only
- Treatment + rapid RNA + annual testing of PWID in OST
- Treatment + rapid RNA
- WHO target (80% reduction)

Scott et al IDJP 2017
Rapid Eliminate C Pilot – rapid testing

Ab negative - Participants offered gold standard blood test to verify result

20 minutes

108 minutes
Treatment - no one “best” model of care
• A community based study measuring the impact of hepatitis C treatment on disease transmission using a networks based approach
• Treatment as prevention treat your friends approach
Project ECHO

Extension for Community Healthcare Outcomes (ECHO) model

• Integration of community-based health centres using telehealth
• Training and support for primary care providers
• Initially 21 sites in rural areas and prisons
• SVR compared at the ECHO sites (n=261) and UNM HCV clinic (n=146)

Concept now move beyond New Mexico - hepatitis C – 9 countries and 21 hubs and many many spokes.
The PRIME Study is a randomised trial assessing the optimal model of HCV care
Increasing care in the correctional settings

- In Australia – significant upscaling of treatment in the prison system
- Andrew Lloyd and Alex Thompson – leading this work in NSW and Victoria respectively
- Predominately nurse led models of care
- Victoria – over 400 prisoners treated in 2016
HIV and HCV coinfection
HIV and HCV coinfection

5000 HIV+ GBM in Victoria

75%+ HIV+ GBM managed at Alfred, RMH, MSHC, & 3 high-case load GPs

500 HCV/HIV+ co-infected

CoEC
Over 75% of all HIV-infected GBM in Victoria - 3 high case load GP clinics, Alfred, RMH and MSHC
Aims to...

**Support & enhance programs to increase HCV treatment uptake among people who inject drugs (PWID) using nurse-led models of care in community and prison settings**

**Assess the feasibility and impact of treating** high enough proportion of PWID (~1500 people) annually to **reduce new infections** and, inform HCV elimination models in Australia and globally.
Community Campaigns
HCV Ambassadors
Peer Worker Support

Health Promotion

T & E Programs
Skills-based Capacity Building
1800 HepC Helpline

Training & Education

Clinical Support & Coordination
Access to Fibroscan
Guidelines & Protocols
Support & Mentoring

Clinical Pathways

Establish Data Systems (ACCESS)
Data Linkages
Monitor Trends

Data Systems & Surveillance

Monitor Impact of EC Partnership
Model Impact
Feasibility & Cost-effectiveness
Acceptability

Research & Evaluation

Increase awareness about new HCV Treatments

Increase access to HCV Testing & Treatments

Increase capacity of providers to manage HCV treatment in communities

Increase coordination between services

Monitoring Hepatitis C prevalence, incidence & re-infection rate

Support enhanced data management

Community
Prison
PATHWAYS TO LIVER FIBROSIS ASSESSMENT FOR PATIENTS IN PRIMARY CARE

PATIENT CONFIRMED WITH CHRONIC HEPATITIS C (PCR +VE)

INITIAL LIVER FIBROSIS ASSESSMENT USING APRI SCORE

APRI < 1.0

APRI ≥ 1.0

PATIENT NEEDS FIBROSCAN® TO EXCLUDE CIRRHOSIS

PERFORM FIBROSCAN ON SUITABLE PATIENTS

FIBROSCAN < 12.5 KPA

FIBROSCAN ≥ 12.5 KPA

NO CIRRHOSIS SUITABLE FOR HCV TREATMENT IN PRIMARY CARE

REFER TO SPECIALIST IF PATIENT IS NOT SUITABLE FOR FIBROSCAN®

REFER TO SPECIALIST FOR ASSESSMENT & TREATMENT

*FibroScan is not approved for use in people < 18 years, women who are pregnant, people with a pacemaker or implantable defibrillator

Note: Suitable specialists include gastroenterologists, hepatologists and infectious disease physicians. Appropriate specialist depends on your local referral processes.
Hepatitis C Vaccine

• Epidemic varies between countries – for some a vaccine will be vital
• In some countries – unlikely to have high quality harm reduction any time soon
• Even in countries with high treatment coverage – models show HCV vaccine would be effective in stopping reinfection.
Evaluation and Surveillance

ACCESS
- monitor changing trends in HCV prevalence and

Annual needle and syringe program survey

REACH Cohort
Stigma and discrimination

Public health and international drug policy


Executive summary
In September, 2015, the member states of the UN endorsed Sustainable Development Goals (SDGs) for 2030, which aspire to human-rights-centred approaches the same light as potentially dangerous foods, tobacco, and alcohol, for which the goal of social policy is to reduce potential harms.

Published Online
March 24, 2016
http://dx.doi.org/10.1016/S0140-6736(16)00619-X
Involve everyone – included the affected communities
Acknowledgements

**Burnet Institute**

Joe Doyle, Alisa Pedrana, Amanda Wade, Nick Scott, Rachel Sacks Davis, Paul Dietze, Peter Higgs, Mark Stoove, Bridget Draper, Caitlin Douglas, Bridget Williams, Evelyn Wong, Stelliana Goutzamanis, Ned Latham, Emma McBryde, David Iser, Sally von Bibra, Amy Kirwin and all the members of the TAP and MIX field teams and others in the Viral Hepatitis Group and Drugs and Alcohol Group

**St Vincent’s Hospital** – Alex Thompson, David Iser

**Alfred Hospital** – Janine Roney, Mellissa Bryant and team

**Kirby Institute** – Greg Dore, Jason Grebely, Rebecca Guy

**Community based organisations** – Harm Reduction Victoria, Hepatitis Victoria, VAC, Living positive

**Department of Health, Health services** – primary and tertiary hospitals

**Others** – Jeff Lazarus, Andrew Hill, Scott Bowden, John Dillon, Sanjeev Aurora
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