Kirby Institute

Hepatitis C: The Treatment Landscape in 2017
On the road to HCV elimination?

Professor Greg Dore

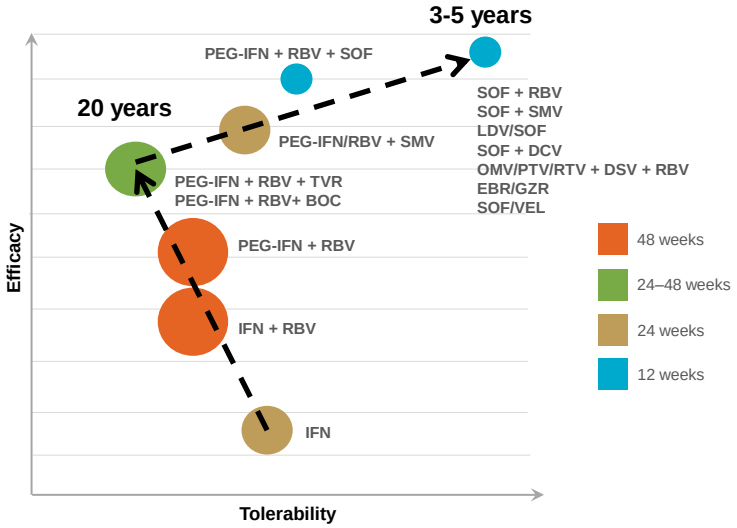
Disclosures

Funding and speaker fees from AbbVie,
Bristol-Myers Squibb, Gilead Sciences and Merck

HCV Treatment in 2017

- Overview of DAA uptake in 2016 and early 2017
- Patterns of DAA treatment, including prescriber type
- HCV treatment among sub-populations: cirrhosis and PWID
- HCV elimination modelling
- DAA treatment outcomes: REACH-C study
- Strategies to continue DAA uptake

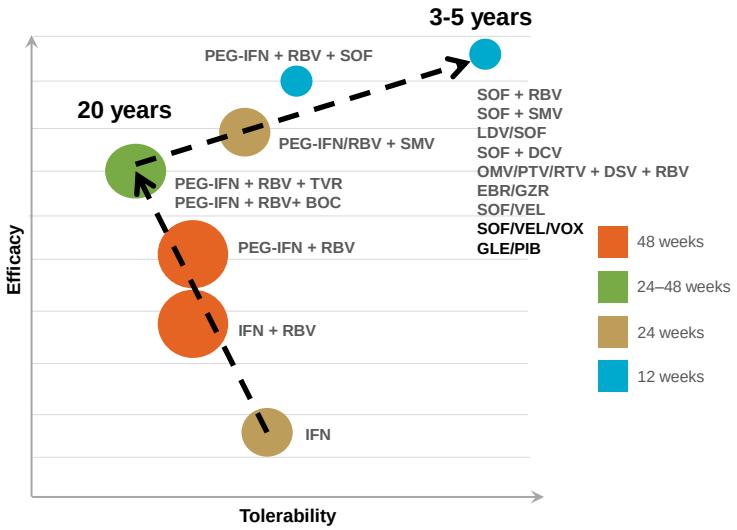
Evolution of HCV therapies



BOC: boceprevir DCV: daclatasvir; DSV: dasabuvir; EBR: elbasvir; GZR: grazoprevir; LDV: ledipasvir; OMV: ombitasvir; PEG-IFN: pegylated interferon; PTV: paritaprevir; RBV: ribavirin; RTV: ritonavir; SMV: simeprevir; SOF: sofosbuvir; TVR: telaprevir

Adapted from Dore G, Feld JJ. Clin Infect Dis 2015;60:1829–36

Evolution of HCV therapies



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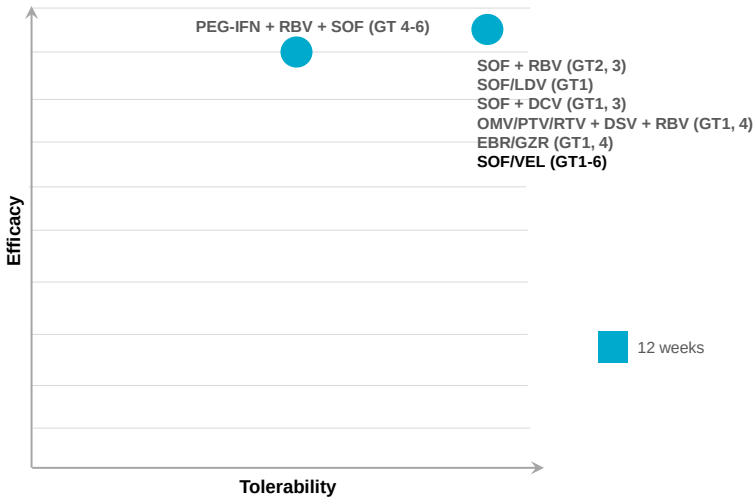
Australian Government-funded DAAs



Gilead Sciences, SOVALDI Australian PI, March 2015; Gilead Sciences, HARVONI Australian PI, June 2016; Bristol-Myers Squibb, DAKLINZA Australian PI, August 2016; AbbVie; VIEKIRA PAK-RBV PI, August 2016, Merck Sharp & Dohme, ZAPATIER ARTG August 2016; Gilead Sciences, EPCLUSA Australian PI August 2017

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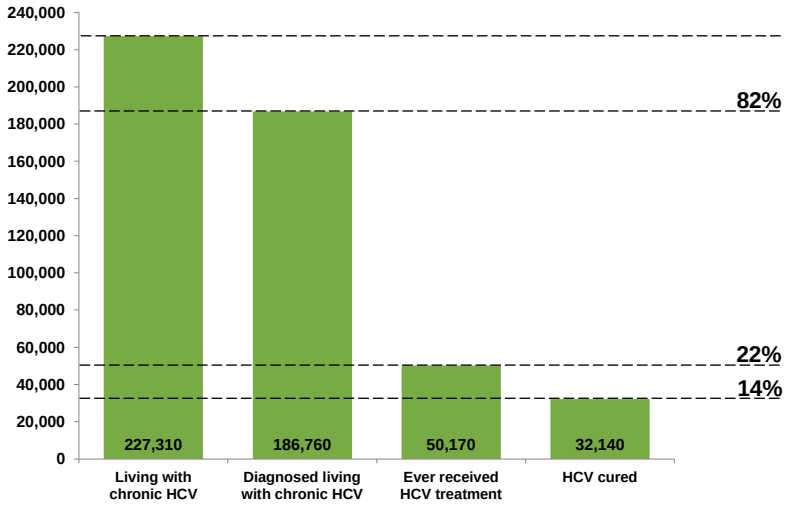
Australia has prepared the foundation for elimination of HCV as a major public health issue, by 2026-2030

HCV care cascade in Australia: end 2015



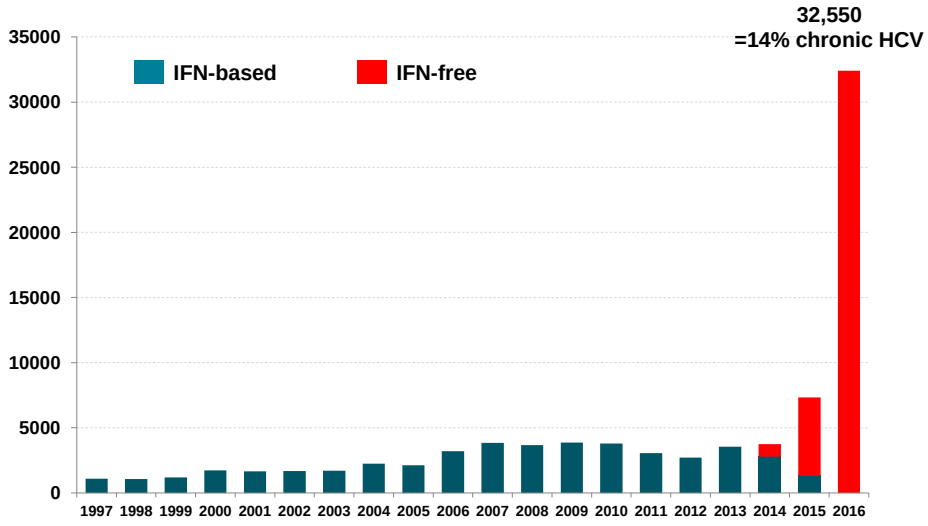
8 The Kirby Institute. Hepatitis B and C in Australia Annual Surveillance Report Supplement 2016

HCV treatment in Australia

- DAA therapy for all Australians ≥18 years with chronic HCV
- No liver disease stage, or drug and alcohol restrictions
- Broad practitioner base (including GPs) with public hospital (S100) and community pharmacy (S85) dispensing

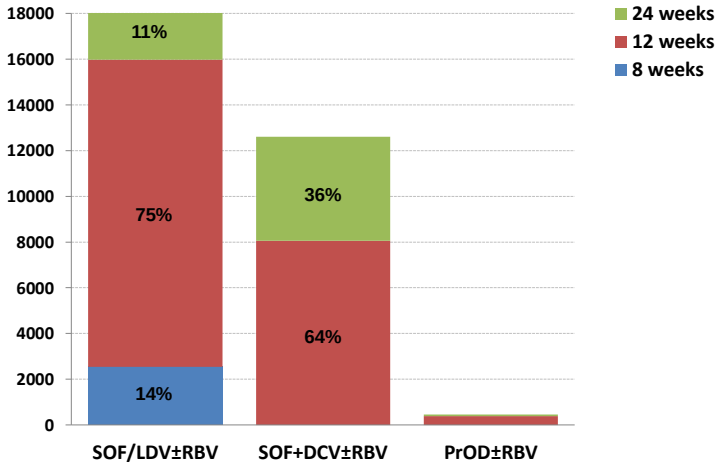
Date listed	Generic name	Genotype	Duration (weeks)
March 2016	Sofosbuvir/Ledipasvir	1	8-24
	Sofosbuvir + Daclatasvir	1, 3	12-24
	Sofosbuvir + Ribavirin	2	12
	Sofosbuvir + Peg-IFN + Ribavirin	1, 3, 4-6	12
May 2016	Paritaprevir/Ritonavir/Ombitasvir + Dasabuvir +/- Ribavirin	1	12-24
Jan 2017	Grazoprevir/Elbasvir	1, 4	12-16
August 2017	Sofosbuvir/Velpatasvir	1-6	12

HCV treatment in Australia



Hajarizadeh B, et al. J Gastro Hepatol 2016 [updated]

HCV treatment in Australia: DAA duration



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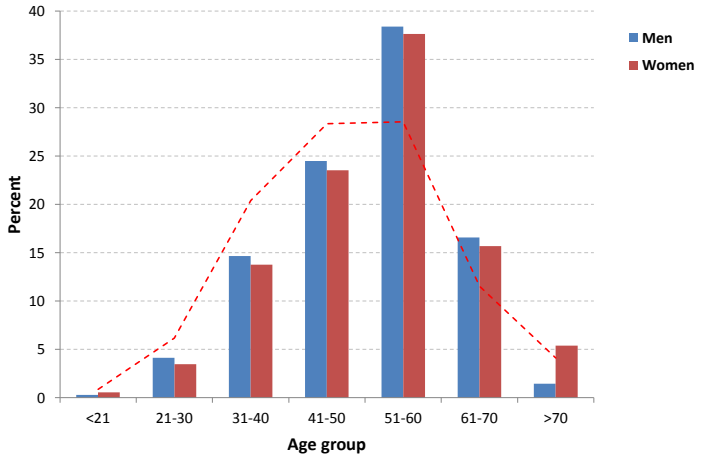
Kirby Institute 2016 (http://kirby.unsw.edu.au/research-programs/vhcrp-newsletters)

HCV treatment in Australia: Age distribution



Dotted line represent the age distribution among people living with chronic HCV in 2015 in Australia

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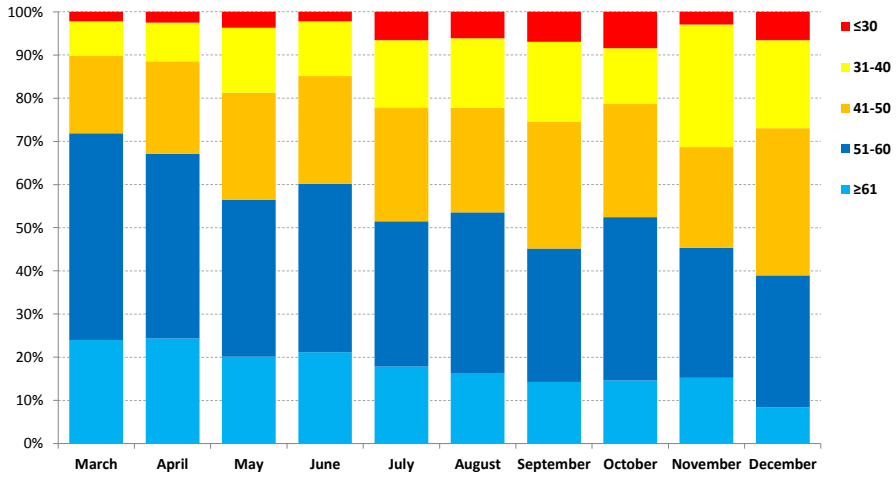
HCV treatment in Australia: Age distribution



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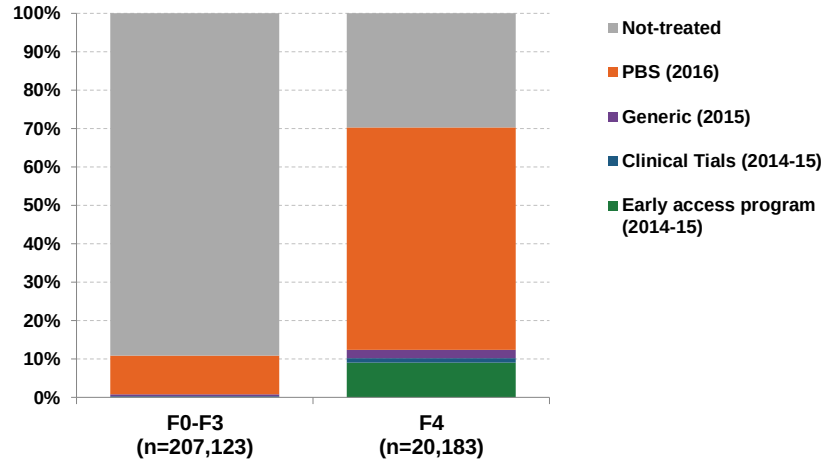
Kirby Institute 2017 (http://kirby.unsw.edu.au/research-programs/vhcrp-newsletters)

DAA treatment uptake is encouraging in key populations for HCV elimination goals: people with cirrhosis and people who inject drugs

HCV treatment in Australia: Cirrhosis DAA uptake



Early access program (n=1,930): 95% F4; 5% F0-F3
Clinical Trial (n=911): 25% F4; 75% F0-F3

Generic (n=1,500): 30% F4; 70% F0-F3 [Freeman EASL 2016]
PBS (n=32,400): 36% F4; 64% F0-F3

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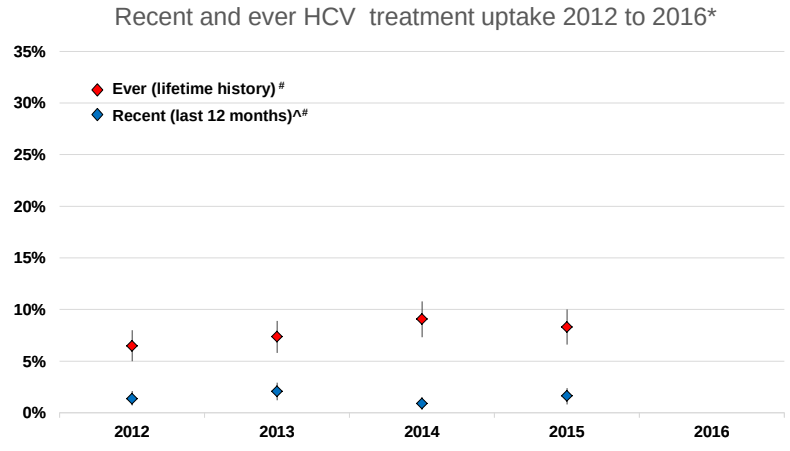
HCV treatment uptake: current PWID (ANSPS)



* Among HCV antibody positive respondents who did not self-report spontaneous clearance
^ Respondents with prior treatment induced clearance were excluded when assessing recent treatment uptake
# 2012-2016 p-trend<0.001

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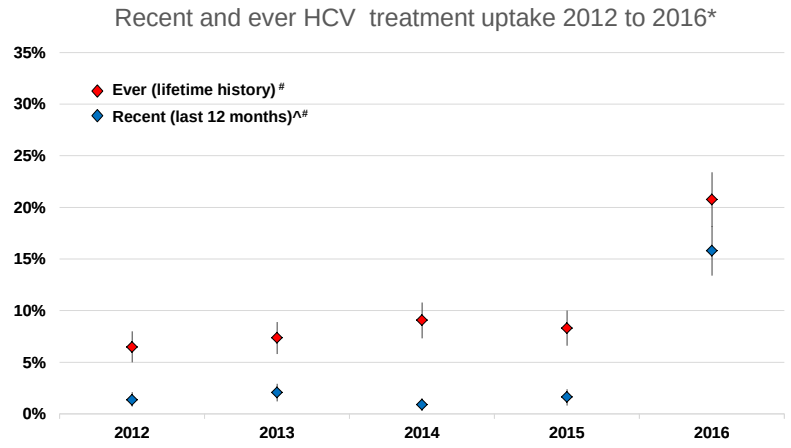
Iversen J, et al. AVHEC 2017

HCV treatment uptake: current PWID (ANSPS)



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DAA treatment outcomes are encouraging, but enhanced efforts are required to improve post-treatment follow-up

Real world efficacy of DAAs

REACH-C

- Observation cohort from a national network of diverse clinics
- March to December 2016, 1618 patients initiated treatment

Clinic	Patients	Location	Type of service/s
Cairns and Hinterland HHS	608	Cairns, QLD	Tertiary, sexual health, outreach specialist, drug and alcohol, prison
Kirketon Road Centre	111	Sydney, NSW	Primary care
Langton Centre	34	Sydney, NSW	Drug and alcohol
Matthew Talbot Hostel	10	Sydney, NSW	Primary care
Prince St Medical Centre	82	Orange, NSW	General practice
Royal Adelaide Hospital	113	Adelaide, SA	Tertiary
Scope Gastroenterology	171	Melbourne, VIC	Private specialist practice
St Vincent's Hospital	426	Sydney, NSW	Tertiary, drug and alcohol
The Byrne Surgery	28	Sydney, NSW	General practice
Toormina Medical Centre	34	Coffs Harbour, NSW	General practice

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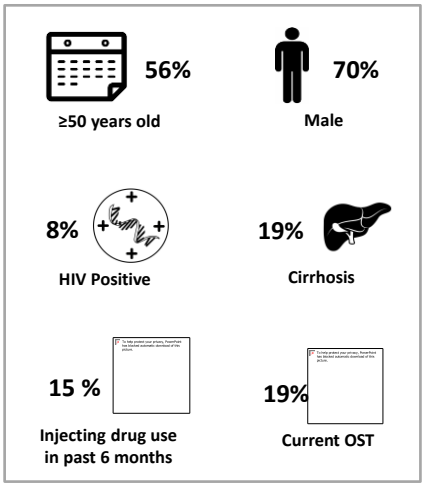
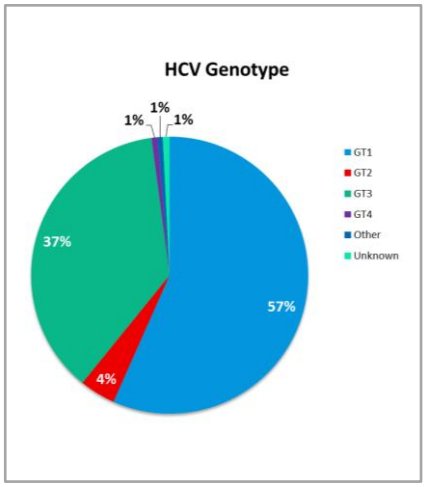
Real world efficacy of DAAs

Baseline characteristics





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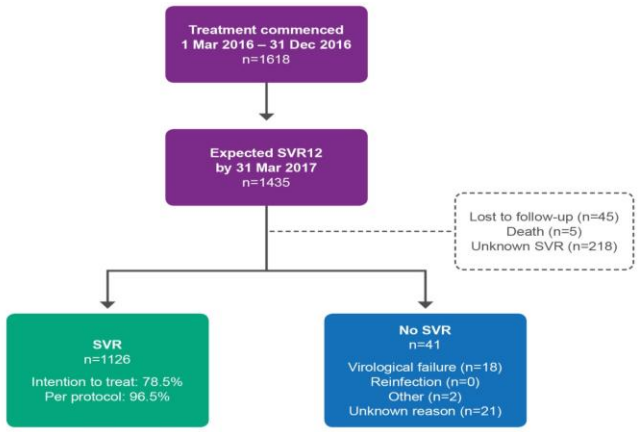
Real world efficacy of DAAs

Overall treatment outcomes



SVR12: sustained virological response 12 weeks after treatment; ITT: intention to treat; PP: per protocol

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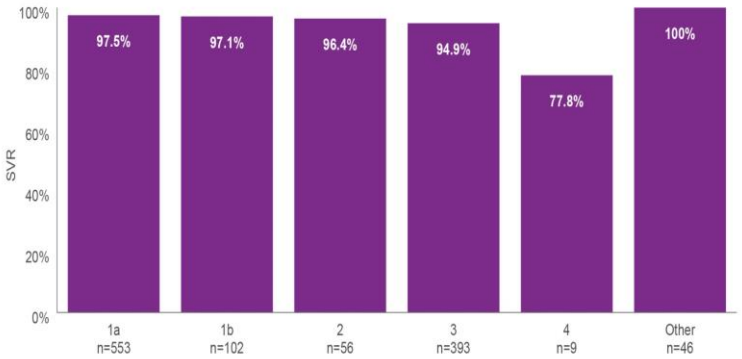
Real world efficacy of DAAs

SVR12 rates by genotype

per protocol analysis



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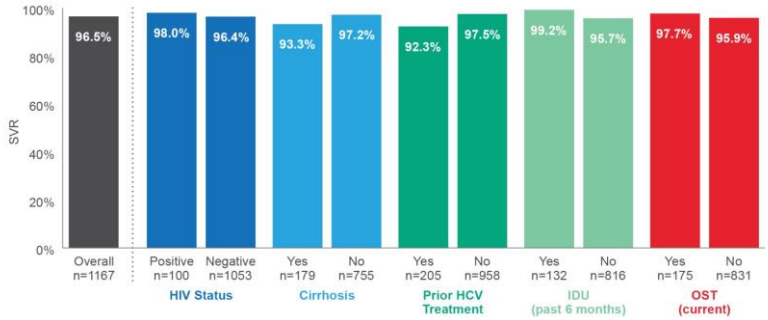
Real world efficacy of DAAs

SVR12 rates by clinical characteristics

per protocol analysis



IDU: injecting drug use; OST: opioid substitution therapy

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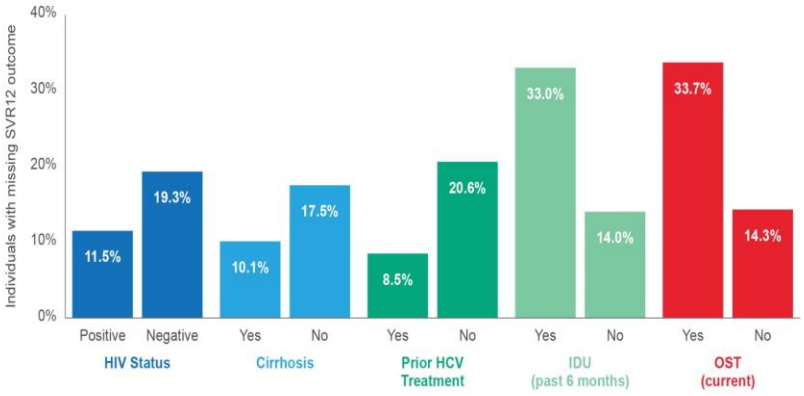
Real world efficacy of DAAs

Missing SVR12 by clinical characteristics



IDU: injecting drug use; OST: opioid substitution therapy

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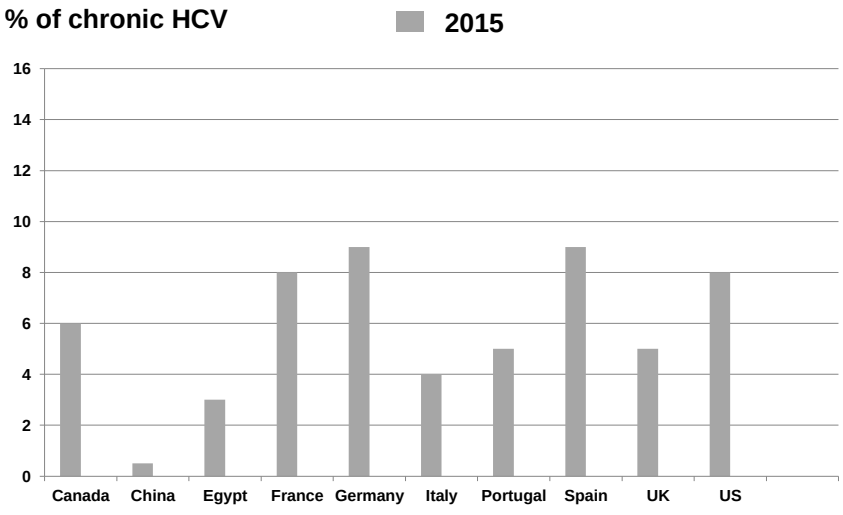
Diverse models of care and DAA access settings are crucial for continued treatment uptake

HCV treatment uptake: 2015-2016



CDA 2017: Polaris Observatory (http://centerforda.com/polaris/)

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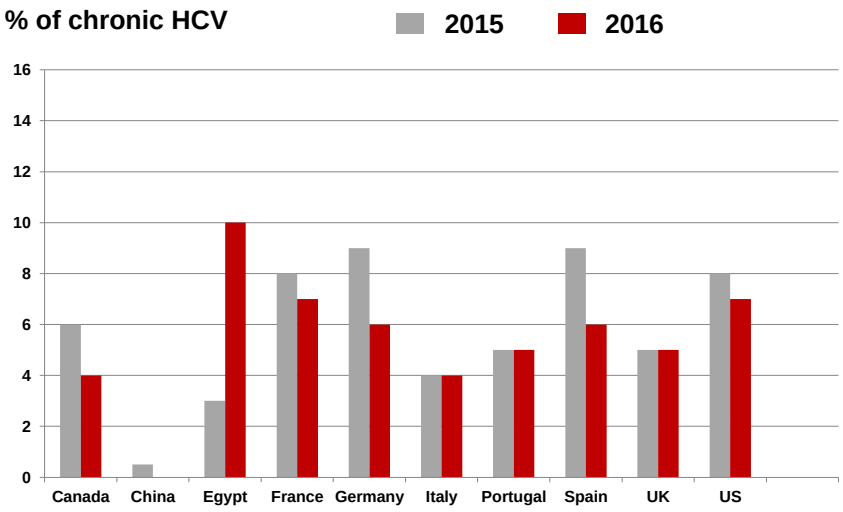

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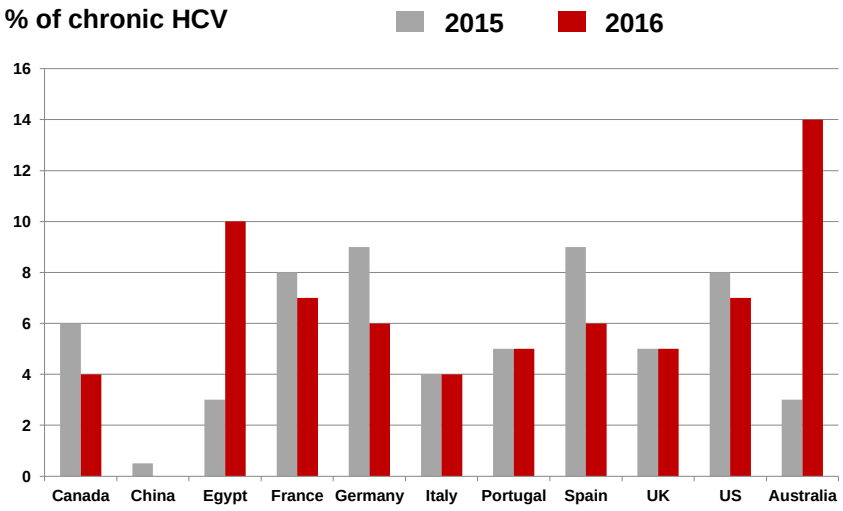

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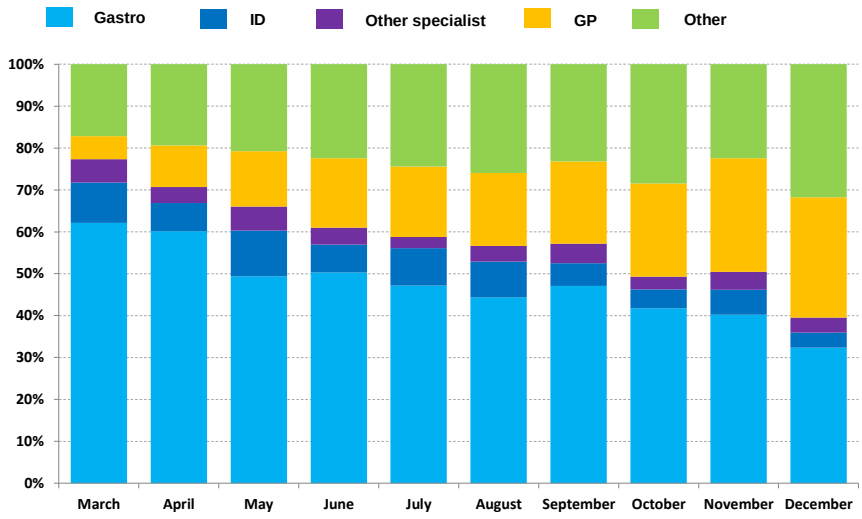
HCV treatment in Australia: Prescriber type



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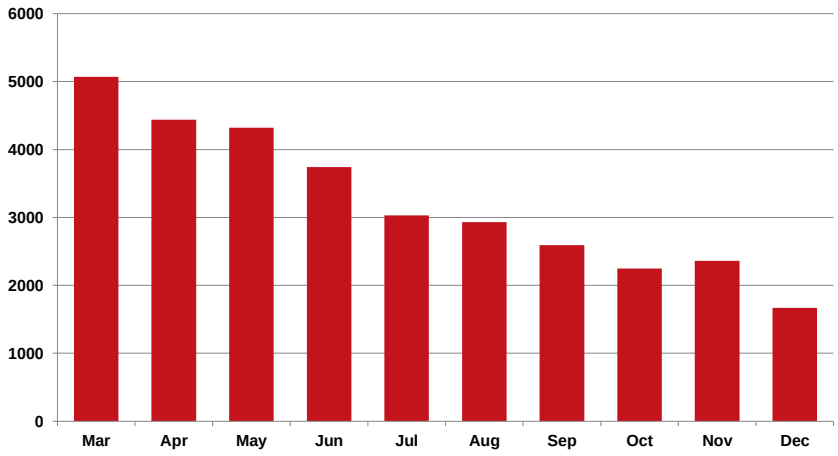
Kirby Institute 2017 (http://kirby.unsw.edu.au/research-programs/vhcrp-newsletters)

HCV treatment in Australia: 2016

Total: 32,400



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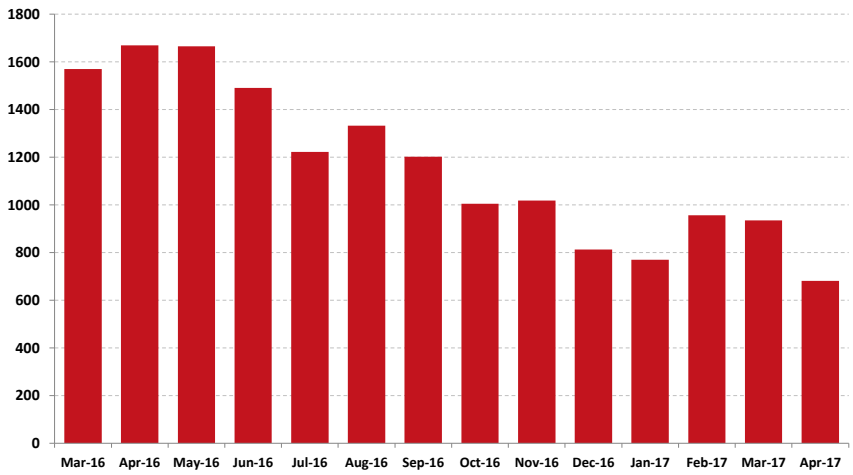
Kirby Institute 2017 (http://kirby.unsw.edu.au/research-programs/vhcrp-newsletters)

DAA initiations in community pharm. (3,500; >60%)



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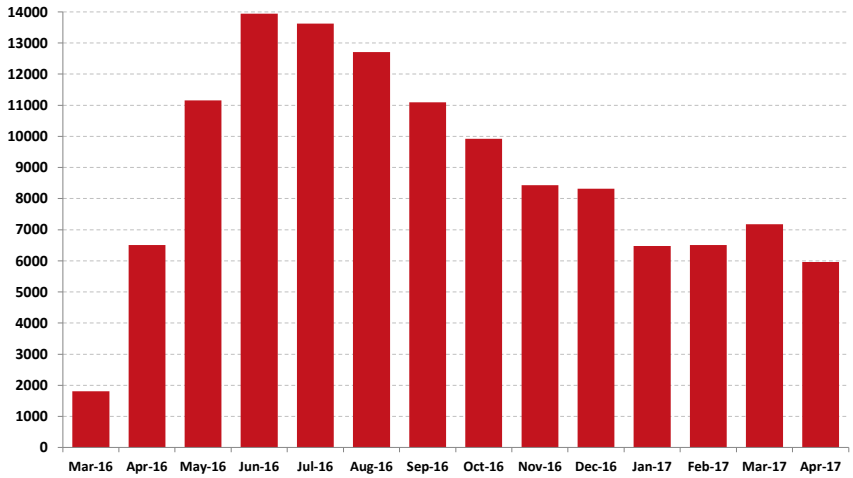
Data Source: QuintilesIMS and NostraData

DAA prescriptions (total) per month: PBS



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Data Source: Prospection

Key points regarding DAA uptake

- 2016 was always going to be a bumper year, given the broad eligibility and “warehouse” effect
- DAA uptake in 2017 will clearly be lower than 2016, but unclear how much lower: may be less than 25,000
- HCV elimination by 2030 will require sustained DAA uptake, at around 20,000/year
- Need for community awareness campaigns to sustain momentum
- Need for continued funding for community-based organisations
- Need for enhanced monitoring and evaluation

Modelling HCV Elimination in Australia

- **Annual number of people receiving HCV treatment**

Treatment Scenario	2015	2016	2017	2018	Post- 2019
Pessimistic	7,296	32,400	18,510	13,890	13,890
Intermediate	**7,296**	**32,400**	**27,770**	**23,143**	**18,510**
Optimistic	7,296	32,400	32,400	32,400	32,400

- **Scenarios for each jurisdiction have same relative change in number treated over time starting from the 2016 PBS estimate**
- **Status quo : Pre-DAA era scenario**
  - Number on treatment kept at 2015 levels

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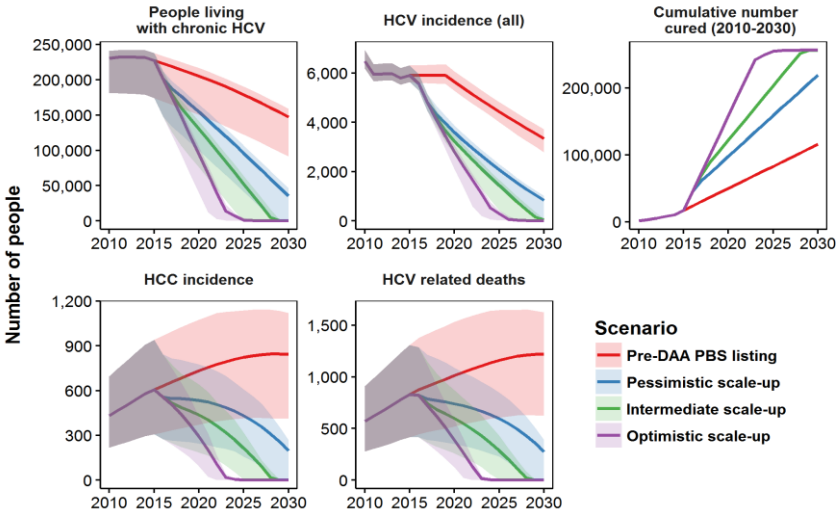
Modelling HCV Elimination in Australia



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Modelling HCV Elimination in Australia

Estimated year Australia meets World Health Organization target compared to 2015 estimates

	Treatment scenario		
WHO target	**Pessimistic**	**Intermediate**	**Optimistic**
80% reduction in new chronic infections	**2028**	**2026**	**2023**
80% of people living with chronic HCV treated	**2031**	**2026**	**2021**
65% reduction in HCV-related deaths	**2029**	**2024**	**2021**

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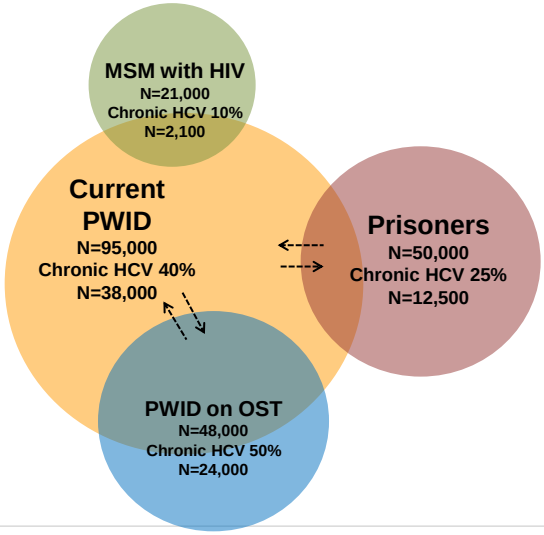
Key high-risk populations will need to be the focus, if HCV elimination to be achieved within next decade

High risk populations for HCV: Australia



Larney S, IJDP 2017; Kirby Institute 2017

Monitoring and Evaluation of HCV Elimination

- ***DAA scale-up:*** Monitoring of DAA uptake, prescriber patterns, geographical coverage, treatment completion, and retreatment
- ***Real-world DAA treatment outcomes:*** REACH-C/OPERA-C
- ***Liver Disease burden:*** Data linkage (several jurisdictions) with hospitalisation (DC, HCC), cancer registry (HCC), death registry (liver disease and all-cause mortality), PBS (DAAs), and MBS (procedures).
- ***Chronic HCV prevalence in high-risk populations :*** ANSPS for current PWID (including DAA resistance monitoring); CEASE/Co-EC for HIV/HCV.
- ***HCV transmission: HCV incidence:*** ACCESS database; HCV notifications (acute, younger age); ***HCV reinfection:*** ANSPS, cohort studies in community and prison settings; ACCESS)

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Conclusions

- Australia is a leading country in relation to initial DAA roll-out, despite a delayed start
- Key populations for HCV elimination are being reached
- A broadened range of models and prescribers should provide sustained momentum, albeit at lower levels than 2016
- DAA outcomes are favourable, although post-treatment follow-up not optimal
- The next 2-3 years are absolutely crucial

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Prof. Julie Bruneau (Canada)
Dr. Jordan Feld (Canada)

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