Estimating HCV population size and care cascade by 2021 in Australia

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Introduction

- Monitoring direct-acting antiviral (DAA) treatment coverage is crucial for tracking progress in eliminating chronic hepatitis C (HCV).
- In March 2016, Australia made highly-subsidized DAA treatment accessible to all adults with chronic HCV.
- Validation of Australian HCV cascade estimates using empirical data is vital to evaluate progress towards WHO elimination targets.

Aims

We aimed to:
(1) Update 2021 Australian HCV cascade estimates
(2) Compare estimates with available treatment coverage and mortality data
(3) Evaluate Australia's ability to meet the WHO elimination targets

Methods

- We updated a previous model for Australia, incorporating data until the end of 2021 for HCV prevalence, diagnoses, and DAA uptake.
- Data from National Notifiable Disease Surveillance System (notifications) and Pharmaceutical Benefits Scheme (number treated) were used.
- The cured population had reduced progression rates compared to the viraemic population.
- Duplicates of HCV notifications were accounted for (9%, ranging from 7% to 11%).
- A spontaneous clearance rate of 36% was used based on a systematic review.
- Australia's progress towards WHO targets was assessed under a treatment scenario where the annual treatment number between 2022 and 2030 remains unchanged from 2021.

Table 1: Annual number of people receiving DAA treatment

	2016	2017	2018	2019	2020	2021	Post-2021
Treatment uptake	33,200	20,970	15,210	11,310	8,230	6,470	6,470

Results

Table 2: Estimated HCV-related outcomes (nearest 10)

	End 2015	End 2021
Chronic HCV prevalence	0.7%	0.3%
PLHCV	160,060	81,300
Annual HCV infections	5,450	3,920
Annual DC cases (viraemic+cured)	530	300
Annual HCC cases (viraemic+cured)	410	290
Annual liver-related deaths (viraemic+cured)	700	460

Figure 1: HCV cascade of care for 2021

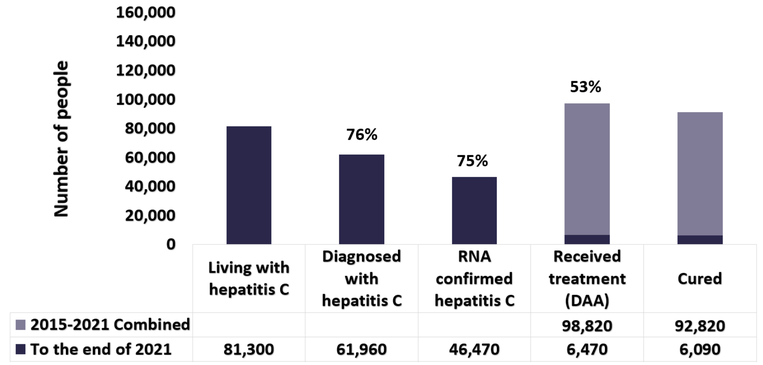
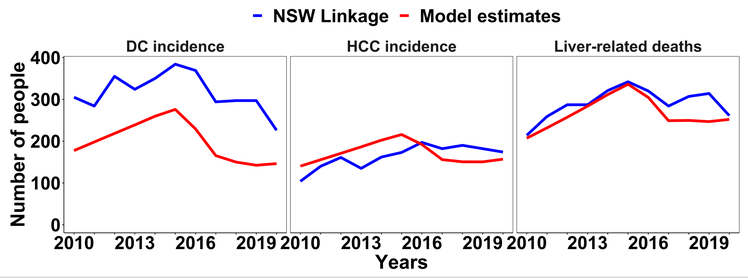
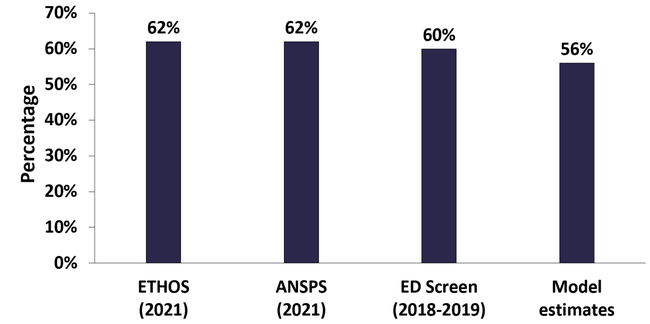


Figure 2: Validating modelled liver-related deaths with empirical data (NSW linkage)



Results

Figure 3: Modelled treatment coverage compared to study data



Note: ETHOS: ETHOS Engage study [1]; ANSPS: Australian Needle and Syringe Program Survey [2]; ED: Emergency Department [3]

Table 3: Years WHO targets will be met

	Year meeting WHO target
80% eligible treated	2030
90% reduction in incidence	2033
65% reduction in liver-related deaths (viraemic+cured)	2038

Conclusions

- HCV prevalence has halved since 2015, despite declining DAA treatment.
- Updated estimates for the HCV cascade align with empirical data, validating our model assumptions and outcomes.
- Despite major reduction in PLHCV, enhanced HCV screening and linkage to treatment is required.
- Additional empiric data on both treatment coverage and advanced liver disease events would benefit model validation and calibration.

References

[1] Conway A, et al. Viruses. 2022 Jul; 14(7): 1555.
[2] Heard S, et al. Australian Needle and Syringe Program Survey. Sydney: Kirby Institute, UNSW Sydney.
[4] Prince DS, et al. J Viral Hep 2021;28:121-128.

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