



## RACP Foundation Research Awards

### FINAL REPORT

<b>Project / Program Title</b>	The cost-effectiveness and prevention impact of hepatitis C virus treatment in a community-based setting using a social networks approach	
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<b>Award Received</b>	2016 Cottrell Research Establishment Fellowship	
<b>Report Date</b>	7 March 2017	
<b>Chief Investigator / Supervisor</b>	Prof Margaret Hellard	
<b>Administering Institution</b>	Burnet Institute	
<b>Funding Period</b>	Start Date:	1 January 2016
	Finish Date:	31 December 2016

#### PROJECT SUMMARY

Hepatitis C virus (HCV) is a major global health problem causing significant morbidity and mortality among 185 million affected people. In Australia, most new infections occur in people who inject drugs (PWID). The WHO has set targets to eliminate HCV by reducing HCV-related deaths and reducing the number of new HCV infections. The impact and cost-effectiveness of providing treatment to PWID in the community to prevent new HCV infections has not been studied, but is a key strategy for elimination of HCV.

This project aimed to determine the impact and cost-effectiveness of new oral HCV treatment among PWID. We used mathematical models to determine the total cost of increasing access to new treatment for all PWID infected with HCV in Australia, compared to no treatment or providing treatment only in later stages of disease. Our models are unique because they take into account a strategy to not only treat random individuals, but at the same time treat their friends or 'networks', who also inject drugs.

Our research has found that increasing new HCV treatments to PWID is cost-effective in Australia and that reaching the WHO elimination goals can be achieved. Treatment not only reduces the impact of HCV on those PWID with HCV infection, but also prevents people from acquiring new HCV infections. We also found that treating PWID along with their injecting network is more cost-effective than treating individuals at random. Our findings are important to inform health policy and to inform approaches that make the most of our limited health resources in order to reduce the negative impact of HCV in Australia and internationally.

## PROJECT AIMS / OBJECTIVES

Aim 1: Determine the cost-effectiveness of community-based HCV treatment using direct-acting agents (DAAs) in PWID compared to current practice.

Aim 2: Quantify the effectiveness of scaling-up a network-based 'treat your friends' strategy for reducing HCV incidence among PWID compared to a random treatment strategy.

Aim 3: Determine the cost-effectiveness of TAP when treating PWID and their immediate injecting network ('treat your friends' strategy) compared to a random treatment strategy.

## SIGNIFICANCE AND OUTCOMES

The models developed in this project were able to realistically estimate the impact of scale-up of such a treatment; accounting for indirect effects of treatment, reinfection and differences in cost that arise when implementation is on a community-wide scale. We found that using DAAs in the community to treat HCV in PWID is cost-effective and could prevent a significant number of liver-related deaths. When scaling-up treatment to population levels in Australia, we estimated that achieving WHO elimination goal by 2030 is likely to be cost-effective, with prioritised treatment for PWID to reduce incidence. Treatment using a network-based 'treat your friends' strategy is likely to be significantly more cost-effective compared to treating individuals at random.

Our models are extremely valuable for future responses to HCV worldwide. Our models will likely shape the Australian government's future approaches to HCV treatment as prevention and HCV elimination, and inform future approaches to HCV care globally.

## PUBLICATIONS / PRESENTATIONS

### Publications:

Scott, N., Iser, D. M., Thompson, A. J., Doyle, J. S., & Hellard, M. E. (2016). Cost-effectiveness of treating chronic hepatitis C virus with direct-acting antivirals in people who inject drugs in Australia. *Journal of Gastroenterology and Hepatology (Australia)*, 31(4), 872- 882.

doi:10.1111/jgh.13223

Scott, N., McBryde, E. S., Thompson, A., Doyle, J. S., & Hellard, M. E. (2016). Treatment scale-up to achieve global HCV incidence and mortality elimination targets: A cost-effectiveness model. *Gut*. doi:10.1136/gutjnl-2016-311504

At the time of this report, two additional manuscripts are currently under review.