Institution: University of the West of Scotland

Unit of Assessment: UoA22

Title of case study: Prevention of Hepatitis C virus (HCV) infection among people who inject drugs

1. Summary of the impact

The research reported here has influenced the Scottish Government's Hepatitis C Action Plans and led to changes in practice in services providing sterile injecting equipment to people who inject drugs (PWID) in Scotland and to reductions in risk behaviours for hepatitis C infection among this population. Specifically, there has been an increase in the availability and uptake of sterile equipment used to prepare and inject drugs and a reduction in sharing of such equipment by PWID. More recent research is beginning to indicate that the changes in Government policy and practice are helping to reduce recent (incident) hepatitis C infections among PWID.

2. Underpinning research

The impacts reported here are derived from a body of research spanning more than a decade from the mid-1990's to the present. The aim of the research has been to determine the prevalence, incidence and associated risk factors for transmission of hepatitis C among PWID in Scotland.

All of the research has been led by Professor Taylor, Chair in Public Health at the time of the research. Key collaborators are colleagues at Health Protection Scotland and research staff at UWS.

Hepatitis C, a blood-borne virus, is a major public health problem, described by the Scottish Government in 2004 as "one of the most serious and significant public health risks of our generation"[1]. Globally, approximately 10 million people are affected by hepatitis C. PWID are disproportionally more likely to be infected with hepatitis C, with upwards to 90% of PWID infected in comparison with ~2% of the general population. Incidence of new infections is estimated as at least 10% per annum. The main route of transmission for PWID is through injecting with contaminated injecting equipment.

The research described here has shown the extent of the infection among Scottish PWID and risk behaviours which contribute to transmission both before and after implementation of new policies. The early research indicated that 90% of PWID in Scotland had been infected with hepatitis C[2] (Roy et al) and that incidence of infection was steady at 20-30 infections per 100 person years of injecting[2]. Professor Taylor and her team also collected information that showed that not all PWID were aware of the amount of needles and syringes they were entitled to obtain at needle exchanges, even after a specially targeted campaign, nor did some services inform them of this[3]. One study that has had a major impact on policy and practice was a groundbreaking ethnographic study, the first in the UK and one of few worldwide, that filmed PWID injecting in their homes and other "natural" settings. Funded by the Scottish Government to examine injecting practices and identify where risks for transmission arose, it clearly demonstrated the multiple opportunities for infection in the injecting process, including the extent of sharing other injecting paraphernalia (spoons, water and filters) including the risk of accidental sharing of commonly stored, previously used needles and syringes and preparing drugs in batches with a previously used needle/syringe and sharing the batch between groups of PWID. It also ascertained that PWID had a poor understanding of the risks of transmission associated with these behaviours and indicated that PWID lacked knowledge of transmission of hepatitis C[4].

More recent research by Professor Taylor and colleagues is beginning to indicate that the changes in interventions influenced by the findings described above are coinciding with positive changes on risk behaviours and rates of incident infections. For example, the independent effect of needle/syringe provision on incident HCV infection has been demonstrated using a novel method of testing dried blood spots for recent infection utilising the "window period" [5]. (After infection with HCV, antibodies cannot be detected in blood for several weeks but virus can be detected from about 2 weeks after infection. The period between presence of virus and antibody is known as the "window period". Samples testing positive for virus but negative for antibody are classified as recent or incident infections.) Further work has also shown that the uptake of injecting equipment has increased and that the proportions reporting sharing needles and syringes and other paraphernalia were significantly lower in 2010 than in 2008/9[6]. There are also indications that incident infection is falling[7].

3. References to the research

1. Gov report. Royal College of Physicians of Edinburgh. Consensus Report on Hepatitis C. Edinburgh 2004**.** www.rcpe.ac.uk/education/standards/consensus/hep_c_04.php

2. Peer reviewed KM Roy, SJ Hutchinson, S Wadd, **A Taylor**, SO Cameron, S Burns, P Molyneaux, PG McIntyre, DJ Goldberg. Hepatitis C Virus Infection among injecting drug users in Scotland: a review of prevalence and incidence data and the methods used to generate them. *Epidemiology and Infection*, 2007 Apr;135 (3): 433-42.

3. Gov Report. Taylor A, Allen E, Hutchinson S, Roy K, Goldberg D, Ahmed S, Roberts K. Evaluation of the Lord Advocates Guidance on the distribution of sterile needles and syringes to injecting drug users. Scottish Executive Effective Interventions Unit, Edinburgh 2005. http://www.drugmisuse.isdscotland.org/eiu/pubs/eiu_097.htm

4 Gov report. Taylor A, Fleming A, Rutherford J, Goldberg D. Examining the Injecting Practices of Injecting Drug Users in Scotland. Scottish Executive Effective Interventions Unit, Edinburgh 2004. http://www.drugmisuse.isdscotland.org/eiu/pubs/eiu_060.htm

5. Peer reviewed. Katy M. E. Turner, Sharon Hutchinson, Peter Vickerman, Vivian Hope, Noel Craine, Norah Palmateer, Margaret May, Avril Taylor, Daniela De Angelis, Sheila Cameron, John Parry, Margaret Lyons, David Goldberg, Elizabeth Allen & Matthew Hickman. The impact of needle and syringe provision and opiate substitution therapy on the incidence of hepatitis C virus in injecting drug users: pooling of UK evidence. *Addiction*, 2011;106 (11): 1978–1988. **One of top 3 scientific papers of 2011 voted by European Monitoring Centre for Drugs and Drug Abuse (EMCDDA).**

6. Peer reviewed. Norah Palmateer, Sharon Hutchinson, Georgina McAlliste, Alison Munro, Sheila Cameron, David Goldberg, Avril Taylor. Risk of transmission associated with sharing drug injecting paraphernalia: analysis of recent HCV infection using cross-sectional data. Journal of Viral Hepatitis (in press).

7. Gov Report. University of the West of Scotland, Health Protection Scotland, University of Strathclyde and the West of Scotland Specialist Virology Centre. The Needle Exchange Surveillance Initiative (NESI): Prevalence of HCV and injecting risk behaviours among people who inject drugs attending injecting equipment provision services in Scotland, 2008/9 & 2010. University of the West of Scotland, 2012.

4. Details of the impact

The research described above has impacted directly on policy and practice. The Scottish

Government's Hepatitis C Action Plan Phase 1 states that its understanding of what needs to be done to prevent the transmission of hepatitis C among PWID "has largely been informed by the findings of several key Scottish Executive funded research studies" (p9) among which are Taylor et al, 2004 and Taylor et al, 2005, both cited in the previous section. It also states that another of Taylor's studies (Roy et al, 2007, cited above) has informed the Action Plan. The aim of the first phase of the Action Plan was to gather evidence for a set of specified of actions aimed at preventing infection and developing specific proposals for improvements in services. One of the Prevention Actions (Action 2) arose directly from the findings of Taylor's ethnographic work cited above. It stated "these interventions should include.....distributing a wide range of paraphernalia in addition to needles and syringes in needle exchanges; and labelling or colour coding of injecting equipment to help drug users identify their own" (P10). Based on her expertise, Professor Taylor was asked to chair the Prevention Working Group of the Action Plan, Phase 1.

The second phase of the Scottish Government's Hepatitis C Action Plan aimed at implementing the proposals arising from Phase 1. The Government invested £43 million over the three years of the Action Plan, £8 million of which was dedicated to prevention. Two Actions were influence by Taylor's ethnographic work, "Examining the Injecting Practices of Drug Injectors" cited above (ref 4 above). Action 14 proposed the development of national guidelines for services providing injecting equipment to PWID to ensure consistency across services in Scotland. Action 15 stated that improvements to services should be made in accordance with the Guidelines and these had to include increasing provision and uptake of injecting paraphernalia as well as provision of colour coded equipment. Professor Taylor was asked to chair the Guidelines Development Group and the Guidelines for Services Providing Injecting Equipment were published in 2010 but Health Boards had access to them from 2009.

The Guidelines recommended that all items of injecting paraphernalia should be provided for each injection, free of charge. This has coincided with a significant increase in the provision of paraphernalia from Scotland's injecting equipment provision services: 350,000 filters and 500,000 spoons were provided between April 2009 and March 2009, prior to the publication of the Guidelines and this had risen to 2,534,289 filters and 2,527,480 spoons between April 2011 and March 2012.

Professor Taylor was also commissioned to lead on and undertake the Scottish Government funded "Needle Exchange Surveillance Initiative" to monitor the impact of the prevention actions of the Hepatitis C Action Plan, Phase II (Action 22 of the Action Plan Phase II). This includes monitoring on an annual basis the prevalence, incidence, risk behaviours and uptake of services for hepatitis C among PWID attending injecting equipment provision services in all mainland health boards in Scotland. Three sweeps of the study have been undertaken. Papers arising from this have indicated i) that the expansion of injecting equipment recommended by the *Guidelines* has coincided with greater uptake of injecting paraphernalia and this, in turn, is associated with safer injecting practices[1] and ii) that high coverage of needle and syringe programmes can substantially reduce the risk of hepatitis C transmission among people who inject drugs (ref 6 above).

The study "Examining the Injecting Practices of Drug Injectors" has also led to the commercial development of coloured syringes to reduce the occurrence of syringe sharing and also to the development of a training DVD ("The Injecting Process: Viral Transmission"), in which Professor Taylor and her team demonstrate the multiple risks for infection during the injecting process. The DVD has been distributed widely to healthcare workers and service providers, both in the UK and internationally. The study also resulted in numerous invitations to present the study in the UK and other countries, often to drug service and healthcare workers. The invitations included presenting

at the UK Advisory Committee on the Misuse of Drugs (ACMD) in 2004, the National Advisory Committee on Drugs in Ireland in 2004, and organising and presenting at a symposium at the International Conference on the Reduction of Drug Related Harm in 2005.

5. Sources to corroborate the impact

1. Hepatitis C Action Plan for Scotland Phase I: September 2006 – August 2008. Scottish Executive, Edinburgh 2006 (www.scotland.gov.uk/Resource/Doc/148746/003953) – *impact on government policy*

2. Hepatitis C Action Plan for Scotland Phase II: May 2008 - March 2011. The Scottish Government, Edinburgh 2008 www.scotland.gov.uk/Publications/2008/05/13103055/00) – *impact on government policy*

3. *Guidelines for Services Providing Injecting Equipment. The Scottish Government, Edinburgh 2010* www.scotland.gov.uk/Publications/2010/03/29165055) – *impact on government policy*

4. Nevershare needles www.exchangesupplies.org – *impact on service provision*

5. *The Injecting Process: Viral Transmission*", www.exchangesupplies.org – *impact on education for service providers*

6. ISD Scotland & NHS National Services Scotland. Injecting Equipment Provision in Scotland Survey 2011/12. June 2013. Significant increase in the provision of paraphernalia – *outcome of government policy influenced by the research.*

7. Report of the Global Commission on Drug Policy The Negative Impact of the War on Drugs on Public Health: the Hidden Hepatitis C Epidemic. May 2013, Geneva. "Evidence based national hepatitis C strategies have the potential to reduce the financial and societal burden of the epidemic. The Hepatitis C Action Plan for Scotland is an impressive example of a national strategy that has successfully focused on people who use drugs. Within a period of six years, hepatitis C testing, prevention and treatment have all been improved" P16.