

New research traces hepatitis C infections in Scotland back to WWII

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Electron micrographs of hepatitis C virus purified from cell culture. Scale bar is 50 nanometers. Credit: Center for the Study of Hepatitis C, The Rockefeller University.

The roots of hepatitis C infection in Scotland date back to the Second World War, according to new research from the University of Glasgow.

In a study published in the *Journal of Virology*, scientists from the MRC-

University of Glasgow Centre for Virus Research and NHS [virus](#) diagnostics labs describe how they examined the spread of hepatitis C virus (HCV) across Scotland by comparing the sequence of [virus strains](#) in infected individuals across various geographical areas.

The researchers showed that HCV entered Scotland during the 1930s and 1940s while also spreading to other countries throughout the world, probably through the mass treatment of soldiers in field hospitals.

Transmission of the virus within Scotland started to increase in the 1970s with different strains originating in Glasgow and Edinburgh. The Glasgow strains subsequently spread to other regions of Scotland. It was not until several decades later, in the 1990s, that extensive HCV transmission was observed in Aberdeen and the predominant strain was one that was rarely identified outside of Aberdeenshire.

Looking in more detail at the Glasgow strains, they were able to identify the key areas of the city involved in the spread of the virus up to the present day. Focusing treatment and preventative measures in these regions could help to reduce the prevalence of HCV in Scotland.

It is estimated that 36,700 people in Scotland are currently infected with HCV. The virus infects the liver and causes a chronic infection which may remain undetected for decades before symptoms occur. HCV is a blood-borne virus which was once spread through the use of unscreened blood and blood products or through using unsterilized medical equipment such as syringes.

Nowadays, transmission of the virus in the UK is associated mainly, but not exclusively, with the sharing of needles during injecting drug use. Understanding how HCV spreads could support national initiatives such as the Hepatitis C Action plan to prevent transmission of the virus, to treat infected individuals and to monitor the appearance of drug-resistant

strains.

Lead scientist of the study Dr Carol McWilliam Leitch, of the Centre for Virus Research, said: "HCV poses a significant public health challenge in Scotland as well as globally. There is currently no vaccine against the virus and the recently developed antiviral drugs are not only extremely costly, but resistant strains have already emerged. Pinpointing regions of Scotland driving HCV spread will allow us to more effectively target treatments, monitor their effect and track resistant strains. These measures are essential if we are to combat the virus. We now intend to focus our attention on HCV spread in other Scottish regions and to extend the study across the UK".

Dr John McLauchlan, Associate Director of the Centre for Virus Research, commented: "Scotland has an international reputation in studying the HCV epidemic that is a global clinical problem, particularly in areas of public health. This study gives us a historical record of the spread of the virus in different communities. It will act as a platform for future projects with Health Protection Scotland to follow any strains in the community that may be resistant to these new drugs. In doing so, we can support national initiatives that will eradicate HCV infection as a [public health](#) concern".

Professor David Goldberg of Health Protection Scotland, who led the team which developed and implemented Scotland's Hepatitis C Action Plan, said: "This unique study provides invaluable information on the origins of a country's hepatitis C epidemic. Such information is vital in understanding the spread of infection, so critical in shaping strategies to prevent further infection and disease."

Leon Wylie, Head of Hepatitis Scotland, added "This research is very exciting, if we had known then what we know now about Hep C in Scotland we could have identified, and intervened at, key transmission

points. This may have significantly altered the course of the epidemic.

"It is vital that we also use this new method to provide the most benefit for those affected by the illness. As the new treatments are very effective, but also very expensive, we need to ensure we monitor and minimise any build up of resistance to the new drugs in people affected by Hep C.

"Not only can this type of science help with Hep C, it can potentially be used with preventing or identifying outbreaks of other types of blood borne infections, such as HIV, amongst those at risk. It again shows Scotland at the cutting edge of the international response to viral hepatitis".

The study, titled 'Spatiotemporal Reconstruction of the Introduction of Hepatitis C Virus into Scotland and Its Subsequent Regional Transmission', is published in the *Journal of Virology*. The study was funded by the Medical Research Council.

More information: Anna L. McNaughton et al. Spatiotemporal Reconstruction of the Introduction of Hepatitis C Virus into Scotland and Its Subsequent Regional Transmission, *Journal of Virology* (2015). [DOI: 10.1128/JVI.02106-15](https://doi.org/10.1128/JVI.02106-15)

Provided by University of Glasgow

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