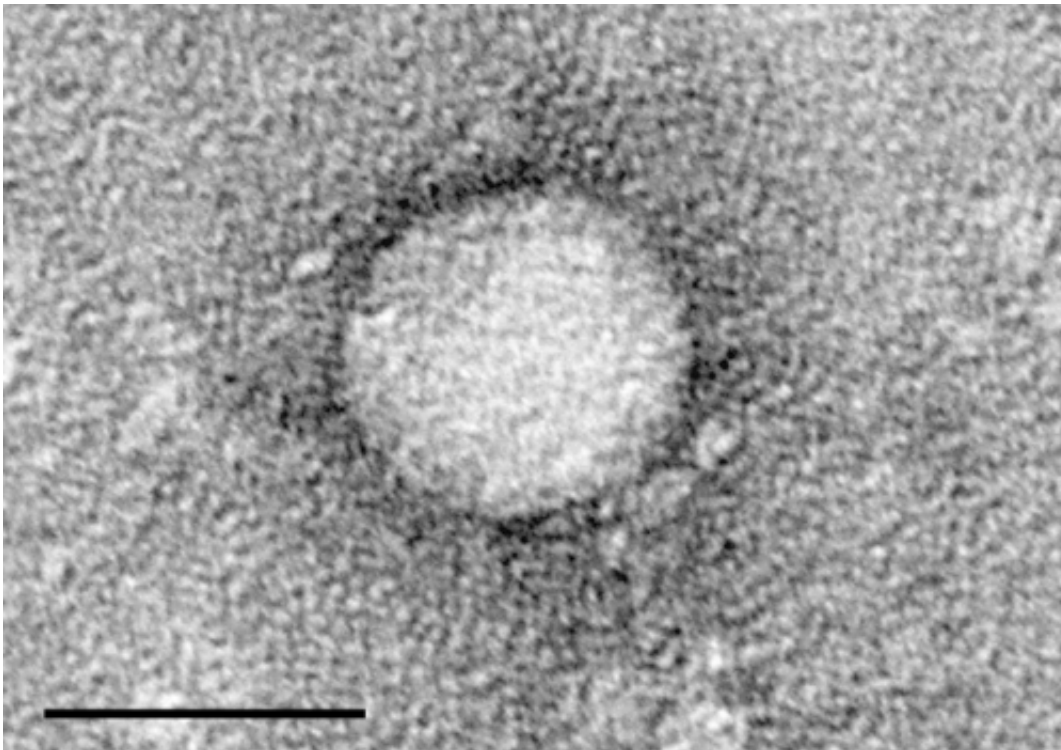


Cherokee Nation American Indian Tribe showing it is possible to eliminate hepatitis C

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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 Cherokee Nation American Indian population is aiming to eliminate hepatitis C virus (HCV) among its tribal citizens, where already almost half have been screened for the virus and around one quarter of those estimated to be infected have already been cured. The tribe will present

its progress at the World Indigenous People's Conference on Viral Hepatitis in Anchorage, Alaska (August 8-9).

Hepatitis C is a viral infection which can often remain symptomless for years. Left unchecked, it can cause extensive liver damage, including cirrhosis and ultimately liver cancer and death. Some 71 million people worldwide are thought to be infected, with at least 3 million of those in the USA. Sources of infection include injecting drug use past or present; blood transfusions that took place before 1991 when the virus could not be screened; other unsafe procedures such as unsafe tattooing in which equipment is not properly sterilised; and mother-to-child transmission.

"Various factors have combined to make elimination of [hepatitis C](#) possible," explains Dr. Jorge Mera, Head of Infectious Diseases at Cherokee Nation, headquartered in Tahlequah, OK, USA. "The development of new directly acting antiviral drugs (DAAs) has made hepatitis C treatment much more successful and with fewer side effects. Alongside this, in 2015 the US Centers for Disease Control and Prevention (CDC) offered their support telling us they wanted us to aim for elimination. In collaboration with the University of Oklahoma, the Oklahoma State Health Department and the CDC, we started our HCV elimination program in August of 2015. This was possible through Gilead, one of the leading manufacturers of DAAs, who also donated \$1.5 million through its Gilead Foundation to help with screening kits and research."

Although there are more than 350,000 Cherokee Nation tribal citizens worldwide about 130,000 live in northeastern Oklahoma, USA, within the tribe's boundary. Rather than screen just the 'baby-boomer' generation now aged in their 50s, Dr Mera and his team are screening all people aged 20-69 years within the tribe's boundary, some 80,000 people. "Because Cherokee Nation citizens, under a treaty right with the United States Government have access to medical care, tracking them

and screening them is slightly easier than might be so for other US populations," explains Dr Mera.

The Indian Health Service (IHS), is an operating division within the US Department of Health and Human Services (HHS) and is responsible for providing direct medical and public health services to members of federally-recognised Native American Tribes and Alaska Native people, including the Cherokee Nation.

IHS helps fund costs and the Cherokee Nation operates one central hospital (W.W. Hastings Hospital) and eight rural [health care](#) centers spread throughout the tribe's jurisdiction for easy access to tribal patients. Dr Mera has worked with them all to provide training and support to help roll out the screening and treatment. Using a program called Extended Community Health Outcomes (ECHO), each health center was trained using teleconferencing and is also able to regularly connect to Dr Mera and other team members centrally to present their cases.

"Anyone entering our health centers who is in this screening age range is offered a test, and almost everyone will say yes. For the 10% or so that say no, we will continue to offer screening whenever they next visit," explains Dr Mera. "However, not everyone is coming to the doctor, of course. So we had the idea of also screening in our dental clinics, to catch our patients in all areas of health care that they might be accessing. Patients who agree to be tested will receive the result then and there and those who test positive will be referred to the hepatitis C clinical provider on the same day in most cases."

In the case of mothers with hepatitis C, if they are unsure when they became infected, then a test is automatically offered to any of her children who could have been infected during the pregnancy. Another crucial screening point is emergency care, when patients come in to the

urgent care or the emergency room and have a signed informed consent they will be tested for HCV unless they opt out. Some 70% of newly diagnosed cases are now coming through this route.

Although it was thought that the hepatitis C prevalence in Cherokee Nation could be as high as 6%, more recent epidemiological studies have placed this estimate at 3.4%, similar to the general population across Oklahoma. This means that of the 80,000 citizens to be screened, some 2,800 would be expected to test positive for hepatitis C. However, only 70% of these would be expected to have what is termed 'active' or 'chronic' infection, with the other 30% of cases having self-cleared their infection.

Thus, Dr Mera's team believes that between 1800 and 2000 Cherokee Nation citizens will require treatment for active infection. As of August 2017, just 2 years into the program, huge progress has been made. Around 46,000 people have been screened, 1076 have tested positive (antibodies) of which 760 are chronically infected requiring treatment; 605 patients had begun treatment (with the other 155 awaiting tests or to begin treatment), with 400 already completed and cured. The actual numbers cured are thought to be higher as some patients do not return to take the test required to confirm they are cured. Of those testing positive, around 60% are male and 40% female.

Of course, the battle against hepatitis C in Cherokee Nation is not only about testing and treatment, but also education and awareness. "We are trying to raise awareness among our citizens to prevent further cases," explains Dr Mera. "New treatments have few or no side effects and treatment is completed in just 12 weeks in most cases." Regarding new infections, he adds: "As well as the ongoing dangers of injecting drug use, another problem we may have is that much of the tattooing in Cherokee Nation does not always take place in state-licensed facilities, and it could be a contributor."

He is also hopeful that the scale up of opioid substitution programs in Oklahoma state could have an impact, although needle exchanges remain illegal in the state—something Dr Mera believes must change to help drive down rates of hepatitis and HIV transmitted through this route.

As the elimination project moves forward, cases of hepatitis C may become harder to find. "We will apply for further agency grant funding to help train community health workers to test people who may never visit the doctor or dentist and educate our tribal citizens about why this elimination project is essential. This is similar to the way Navajo Nation American Indian tribe trained their community health workers to test and deliver care for HIV in their population."

"Through Cherokee Nation's successful partnership with the CDC and the state of Oklahoma, and dedicated work by our epidemiologist and health employees, it has drastically cut hepatitis C rates in our tribal population. We hope this blueprint of proactive screening and treatment can be replicated by other tribal health care systems nationwide, and even globally," said Cherokee Nation Principal Chief Bill John Baker. "Hepatitis C does not have to be the death sentence for Indigenous populations that it has historically been."

"This is an inspirational initiative by a population that has been deeply impacted by hepatitis C," says Raquel Peck, Chief Executive of the World Hepatitis Alliance, London, UK. "Cherokee Nation is showing that with political will, financial support and engagement of the community, it is possible for them, and indeed other populations worldwide, to eliminate hepatitis C as a public [health](#) threat."

Provided by World Hepatitis Alliance

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