

中文題目：2017 年台灣某診所相關之醫源性 C 型肝炎群聚事件

英文題目：An healthcare-associated outbreak of hepatitis C virus infections among outpatients at a medical clinic — Taiwan, 2017

作者：鄔豪欣^{1*}，江雪美²，廖郁昕³，巫坤彬²，吳智文²、陳紫君²，楊志元^{3*}

服務單位：¹疾病管制署感染管制與生物安全組；²疾病管制署北區管制中心；³疾病管制署檢驗及疫苗研製中心

Background: During January to March 2017, three cases of acute hepatitis C (AHC) were reported to the National Notifiable Disease Surveillance System (NNDSS). Initial investigation found that all three cases received intravenous injections from the same clinic in Yangmei, Taoyuan, within 60 days before illness onset. Two additional patients who also had received intravenous injections from the same clinic were reported in May 2017. Taoyuan Department of Public Health (DPH) and Taiwan Centers for Disease Control (CDC) conducted a joint investigation and implemented outbreak control measures.

Methods: Case-finding activities included identifying HCV-infected patients among all patients who had visited the clinic using the national hepatitis C surveillance data, prospective surveillance for AHC cases, and serologic screening for at-risk population. The at-risk population included all individuals who received injectable medication from the clinic during June 10, 2016–May 12, 2017. The 11-month period was designated on the consideration that the HCV transmission most likely occurred. It included the six months preceding the earliest at-risk exposure date among the first three reported AHC cases, which was October 10, 2016, and the date when the injection procedures at the clinic were suspended. On May 16, 2017, Taoyuan DPH issued a press release informing the public about possible hepatitis C transmission at the clinic and telephoned at-risk individuals to be screened for HCV infection. All at-risk individuals were screened for hepatitis C antibody (anti-HCV). Those who were anti-HCV negative and had received injections at the clinic after January 1, 2017 were also tested for HCV RNA. HCV-infected patients were categorized as follows: *AHC*: illness in a patient with any of the following: (1) tested negative for anti-HCV but positive for HCV RNA; (2) seroconversion of anti-HCV within one year; (3) tested positive for anti-HCV, had symptoms consistent with acute hepatitis or elevated alanine aminotransferase ≥ 100 IU/L, and other etiologies of acute hepatitis have been

excluded.

Newly diagnosed HCV infection: illness in a patient with HCV infection but did not meet the case definition of AHC, denied of having been diagnosed with HCV infection previously, and had no other evidence of HCV infection prior to June 10, 2016.

Prior HCV infection: illness in a HCV-infected patient who did not meet the case definition of AHC and newly diagnosed HCV infection.

AHC patients were interviewed to identify risk factors for acquiring hepatitis C. HCV genotyping and molecular sequencing were performed for the first five reported AHC cases, followed by phylogenetic analysis using Maximum Likelihood method and Bayesian inference method on a 908-bp C/E1/E2 region to identify its transmission events. The practices of infection control and procedures of injection at the clinic were inspected.

Results:

Among 1,687 patients who visited the clinic during January 1, 2016–May 12, 2017, 26 patients had been reported to have HCV in the national hepatitis C surveillance system. Among seven clinic-related AHC cases reported after May 12, 2017, three were diagnosed by hospitals and four were identified through at-risk population screening. Among the 12 AHC cases, 9 (69%) were male, and the median age was 58 years (range 34–76 years). The median alanine aminotransferase level was 1596 IU/L (range 89–2793 IU/L) among 9 cases with data available. As of July 31, 2017, among 702 at-risk individuals identified, 541 (77%) were tested for anti-HCV. Among 104 (19%) individuals positive for anti-HCV, one met the case definition of AHC; 87 were newly diagnosed with HCV infection, and 16 had prior HCV infections. Among 267 individuals who received injections after January 1, 2017, and tested negative for anti-HCV, three tested positive for HCV RNA. As of July 31, 2017, a total of 124 HCV-infected patients were identified through all of the case-finding activities, including 12 AHC cases, 87 newly diagnosed HCV infection cases, and 25 prior HCV infection cases. Among these, 121 cases had injections at the clinic X for a median of 32 days (range 1–668 days). The three cases with no history of receiving injections at the clinic had prior HCV infections. Four of five AHC cases genotyped were infected with HCV genotype 1b except the case 3 who was infected with HCV genotype 2a. HCV viral genetic similarity among C/E1/E2 sequences on case 1, 2, and 5 ranged

from 96 to 98 % and clustered as an outbreak group distinct from the sequence derived from case 4. The on-site investigation revealed that the clinic had no infection control plan and a single nurse was responsible for all intravenous cannulation and giving intravenous injections. The clinic practiced poor hand hygiene, prepared injectable medications at contaminated areas, reused syringes, and used single-dose vial medications on multiple persons.

Conclusions: This unprecedented healthcare-associated hepatitis C virus outbreak was attributed to multiple infection control lapses. Safe injection practices, such as avoiding reuse of syringes and needles, and not using single-dose vials on multiple persons should be re-emphasized to health-care providers.