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**Title:** Hepatitis C Outbreak in a Respiratory Care Ward Associated with Frequent Unsafe Injections — Taiwan, 2017

**Abstract Text:**

**Background:** Healthcare-associated outbreaks of hepatitis C virus (HCV) infection has been identified in Taiwan, and poses serious risks of harm to patients. During May–July 2017, Taiwan FETP was notified of four patients with acute HCV infection in a respiratory care ward (RCW). We conducted an investigation to identify the transmission route and risk factors for infection to prevent further transmission.

**Methods:** We performed HCV testing for patients and staff in July 2017; all HCV-positive sera underwent phylogenetic analysis to examine genetic relatedness. We defined cases as patients who was hospitalized from November 2016 to April 2017 (6 months to 2 weeks before the first case was diagnosed) and had HCV seroconversion during hospital stay. We selected controls from patients who were hospitalized during the same period and had a negative HCV test. We reviewed medical records to collect types and times of parenteral medications and invasive procedures. We used Wilcoxon rank-sum test to compare the number of injections between cases and controls, and calculated hazard ratios to identify factors associated with infection by Cox proportional hazards model. We evaluated infection control via on-site observations of injection practice.

**Results:** Of 19 staff and 29 RCW patients, we identified four case-patients and a chronic hepatitis C patient with >99% genetic similarity. Compared to 12 control-patients, case-patients received a higher number of injections per day (3.86 vs 0.02,  $p = 0.01$ ). The hazard ratio of 100 injections for HCV infection was 1.6 (95% confidence interval 1.04–2.59). We found the RCW lacked a designated area and standardized workflow for injection preparation, which could possibly cause blood contamination of environment and medication vials.

**Conclusion:** We identified that the patient-to-patient transmission of HCV was associated with frequent injections and infection control lapses. Healthcare personnel should follow safe injection practices and reduce injection frequency to prevent HCV transmission.

**Keywords:** Hepatitis C, Cross infection, Case-control studies, Infection control