1207. Vaccinia Virus Infection Acquired from an Occupational Needlestick—San Diego, California, 2019

Erin R. Whitehouse, PhD, MPH, RN[1]; Agam Rao, MD[1]; Yon Yu, PharmD[1]; Patricia Yu, MPH[1]; Margaret Griffin, MPH, BS[2]; Susan E. Gorman, PharmD, M.S., DABAT, FAACT[3]; Kristen A. Angel, MPH[4]; Eric McDonald, MD MPH[5]; Anna Liza M. Manlutac, BS [6]; Marcia Isakari, MD, MPH, FACOEM[7]; Brett W. Petersen, MD, MPH[1]; [1]Centers for Disease Control and Prevention, Atlanta, Georgia; [2]Assistant Secretary for Preparedness and Response (ASPR), Atlanta, Georgia; [3]Office of the Assistant Secretary for Preparedness and Response, Department of Health and Human Services, Atlanta, Georgia; [4]County of San Diego Health and Human Services Agency, National City, California; [5]County of San Diego, San Diego, California; [6]San Diego County Public Health Laboratory, San Diego, California; [7]UC San Diego, La Jolla, California

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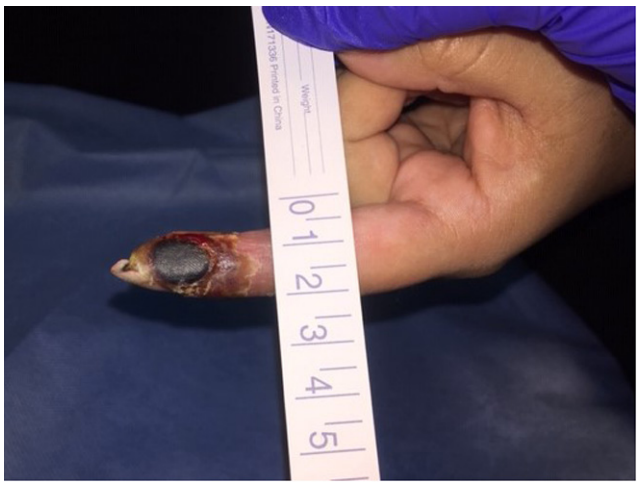
Background. Vaccinia virus, a virus similar to but less virulent than variola virus, is a component of smallpox vaccines and increasingly used for medical research. Vaccinia immunoglobulin intravenous (VIGIV) and tecovirimat are stockpiled in the U.S. Strategic National Stockpile (SNS) for potential smallpox bioterror events, but only VIGIV is licensed for vaccinia treatment. On January 12, 2019, CDC was consulted for worsening infection in a laboratory worker after a needlestick with vaccinia.

Methods. We investigated demographic, clinical, vaccination, and exposure history and determined likelihood of vaccinia virus infection. Identity of the specific strain was sought because some have genetic modifications that might impact virulence. Discussions among stakeholders informed treatment decisions and facilitated medication access and usage. Swabs from the lesion were tested by real-time polymerase chain reaction for orthopoxvirus DNA, which includes vaccinia.

Results. The affected worker was an otherwise healthy 26-year-old woman who developed a pustular lesion at the needlestick site on her left index finger (Image). The patient had been injecting vaccinia virus into a mouse and had declined nationally recommended vaccination. Edema, lymphadenopathy, and fever raised concern for severe illness; neither the patient nor occupational health were certain of the vaccinia strain type. CDC, SNS, local health departments, drug manufacturers, and clinicians rapidly collaborated to make treatment decisions based on available information and ensure delivery of both biologics and administration of tecovirimat under an expanded access investigational new drug protocol. Eventually, a wound swab tested positive and the strain was determined to be one with no known impact on virulence.

Conclusion. With increasing use of vaccinia in research, occupational infections may continue to occur. Health clinics should extensively counsel staff who decline vaccination and have documentation on-hand about vaccinia virus types to inform treatment decisions. This response prompted CDC to develop outreach materials specifically for occupational vaccinia exposures.



Disclosures. **All authors:** No reported disclosures.

1208. Preventing Transmission of Bloodborne Viruses from-Infected Healthcare Workers to Patients in Canadian Healthcare Settings: A National Guideline

Toju Ogunremi, MSc[1]; Katherine Defalco, RN, BScN[1]; B. Lynn Johnston, MD[2]; Isabelle Boucoiran, MD[3]; Maureen Cividino, MD[4]; Blaine Cleghorn, DMD, MS[5]; Melody Ann Isinger, DHCE[6]; A. Mark Joffe, MD[7]; Tony Mazzulli, MD[8]; Yves Robert, MD[9]; Mary Vearncombe, MD[10]; David K. Wong, MD[11]; Jason Wong, MD, MPH[12]; Kathy Dunn, RN, MScN[1]; Bonnie Henry, MD, MPH[13]; [1]Public Health Agency of Canada, Ottawa, ON, Canada; [2]Dalhousie University, Halifax, Ottawa, ON, Canada; [3]CHU Sainte-Justine, Montreal, QC, Canada; [4]St Joseph's Healthcare Hamilton, Hamilton, ON, Canada; [5]Dalhousie University, Faculty of Dentistry, Halifax, NS, Canada; [6]Consultant, Ottawa, Ottawa, ON, Canada; [7]University of Alberta, Edmonton, ON, Canada; [8]Mount Sinai Hospital and University Health Network, Toronto, ON, Canada; [9]Collège des médecins du Québec, Montreal, QC, Canada, [10]Sunnybrook Health Sciences Centre, Toronto, ON, Canada, [11]Toronto General Hospital, Toronto, ON, Canada, [12]BC Centre for Disease Control, Vancouver, BC, Canada, [13]British Columbia Ministry of Health, Victoria, BC, Canada

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Background. Infectious agents, such as bloodborne viruses (BBVs), can potentially be transmitted from healthcare workers (HCWs) to patients. In an effort to reduce this risk to patients, this guideline, which provides a framework for policies on the management of HCWs infected with BBVs in Canada, was developed.

Methods. A total of six systematic reviews (1995–2016) were conducted to inform the risk of transmission of human immunodeficiency virus (HIV), hepatitis C virus (HCV), and hepatitis B virus (HBV) from infected HCWs to patients and the infectivity of each virus related to source serum viral load. Three environmental scans were conducted to inform sections on disclosure of HCW's serologic status, Expert Review Panels, and lookback investigations. Government partners and key stakeholder organizations were consulted and a Task Group provided technical expertise.

Results. The risk of HCW-to-patient BBV transmission is negligible, except during exposure-prone procedures where there is a risk of HCW injury and possible exposure of a patient's open tissues to the HCW's blood. Transmission rates were lowest with HIV and highest with HBV (Table 1). Rates varied with several factors including source viral load, nature of potential exposure, infection prevention and control breaches, susceptibility of exposed patient, and use of post-exposure prophylaxis where relevant. The extent of reporting bias for exposure incidents where transmission did not occur is unknown. Current antiviral therapy informed guideline recommendations, with viral load thresholds provided to assist treating physician, Expert Review Panels and regulatory authorities in determining a HCW's fitness for practice.

Conclusion. Routine Practices (or Standard Precautions) are critical to prevent HCW-to-patient transmission of infections; including BBVs. Recommendations provided in this guideline aim to further reduce the already minimal risk of HCW-to-patient transmission. The guideline provides a pan-Canadian approach for managing HCWs infected with a BBV, with recommendations directly impacting clinical practice related to preventing and controlling healthcare-associated infections.

Table 1: Transmission rates for HIV, HCV and HBV

BBV (number of exposure incidents)	Reported transmission rate*	Pooled transmission rate** (confidence intervals)
HIV (17)	0-3%	0.0056% (95% CI: 0 to 0.026)
HCV (9)	0.04-3.7%	0.46% (95% CI: 0.07 to 1.17)
HBV (20)	0.06–11.11%	1.45% (95% CI: 0.601 to 2.658)

*Rates reported in individual exposure incidents
**Rates calculated from meta-analyses of eligible published exposure incidents

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1209. Seroprevalence of Measles, Mumps, and Rubella in Korean Healthcare Workers and Strategy for Vaccination

Eun Ju Choo, MD, PhD[1]; Se Yoon Park, MD[2]; [1]Division of Infectious Diseases, Department of Internal Medicine, Soonchunhyang University Bucheon Hospital, Bucheon, Kyonggi-do, Republic of Korea; [2]Infectious Diseases, Department of Internal Medicine, Soonchunhyang University Seoul Hospital, Seoul, Seoul-t'ukpyolsi, Republic of Korea

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Background. The measles, mumps, and rubella (MMR) vaccination to children was accelerated in South Korea as the National Immunization Programs in 1985. A two-dose MMR vaccination schedule was introduced in 1997. However, outbreaks of measles in healthcare institution continued to occur. Recent studies revealed that the seroprevalence of measles in healthcare workers (HCWs) was approximately 40–60% in twentieth. The purpose of this study was to determine the seroprevalence of MMR antibodies in HCWs to establish strategy for vaccination.

Methods. To prevent nosocomial transmission of measles, test for MMR antibody of HCWs was conducted in three teaching hospitals from January to February in 2019. The testing was conducted only in the patient contact departments. We excluded HCWs who did a history of vaccination after starting their work. Anti-measles IgG and anti-mumps IgG was detected using chemiluminescence immunoassay. Anti-rubella IgG was detected using chemiluninescence microparticle immunoassay. Equivocal value was treated as negative. We also compare the costs between strategies two-dose vaccination without antibody tests and vaccination after antibody testing.

Results. Total 598 HCWs were included in analysis. Of the HCWs tests, 92.6% were seropositive to measles, 86.6% to mumps, and 79.7% to rubella. In the linear regression analysis, the seropositive of measles and rubella antibodies was increased in proportion to age (β-coefficient 43.4, 95% CI 35.1–51.6, $P < 0.001$ and β-coefficient 10.2, 95% CI 7.2–13.2, respectively). But, the seropositive to mumps was not related to age (β-coefficient 2.6, 95% CI -5.4–10.7, $P = 0.52$). The HCWs who has seropositive to all MMR was 67.2%. It was highest in 1970th birthyear (77.1%) and lowest in 1980th birthyear (60.6%). It costs less 18,000 wons ($15.5) per HCWs in strategy of vaccination after antibody testing than two-dose vaccination without antibody testing.

Conclusion. Our data warrant the needs for routine antibody test for MMR, followed by MMR vaccination in Korean HCWS. We expect that this strategy can save costs and avoid unnecessary vaccination.

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