



LETTER TO THE EDITOR:

Ebola and the Anesthesia Professional: Practical Considerations During the Current Bundibugyo Virus Outbreak

by Brent Lee, MD, MPH, FASA

Since the COVID-19 pandemic, anesthesia professionals have understandably viewed emerging infectious diseases primarily through the lens of airborne transmission. COVID-19, Severe Acute Respiratory Syndrome (SARS), Middle East Respiratory Syndrome (MERS), and Andes hantavirus (ANDV) all require heightened concern for respiratory spread during airway management and other aerosol-generating procedures. Ebola disease caused by the Bundibugyo virus (EVD) is fundamentally different. Under routine clinical conditions, transmission occurs predominantly through direct contact with infectious body fluids and contaminated surfaces rather than by airborne spread (Table 1).¹

Clinically, EVD usually begins with nonspecific findings such as fever, fatigue, myalgias, headache, sore throat, vomiting, diarrhea, and abdominal pain, and may progress to shock, multiorgan failure, and, in some patients, overt hemorrhagic manifestations.² The World Health Organization (WHO) has reported that prior Ebola outbreaks had case fatality rates of approximately 30% to 50%, underscoring the importance of early recognition, supportive care, and strict prevention of occupational exposure.²

Although the current Ebola outbreak remains centered in the Democratic Republic of the Congo and Uganda, recent imported cases in Europe remind us that patients with confirmed disease or significant exposure histories may occasionally present outside outbreak regions.^{3,4} Although such events remain rare, anesthesia professionals should understand the infection prevention principles unique to Ebola.

EBOLA REQUIRES A DIFFERENT INFECTION PREVENTION STRATEGY

The greatest occupational hazards for anesthesia professionals are not routine inhalation of infectious aerosols but exposure to blood, secretions, contaminated equipment, sharps injuries, and self-contamination during personal protective equipment removal (Table 2).^{1,5} This distinction has practical implications because anesthesia professionals routinely perform high-risk procedures including tracheal intubation, vascular access, suctioning, resuscitation, and transport of critically ill patients. Successful

Table 1. EVD vs Recent Respiratory Pandemics: Key Differences.^{1,6,7}

Feature	COVID-19/SARS/MERS/ANDV	Ebola Virus Disease (EVD)
Primary route of transmission	Airborne/droplet aerosols	Direct contact with infectious body fluid; fomites
Airborne risk?	Yes—primary route	Ordinarily no: possible during AGPs (e.g., intubation, suctioning) if fluids are aerosolized
Who is infectious?	Presymptomatic and symptomatic	Symptomatic only (including deceased patients)
At-risk population	General public; any exposure	Close contacts and caregivers; predominately health care workers
Dominant PPE priority	Respiratory protection (N95/PAPR, eye protection)	Barrier/contact protection: impermeable full-body coverage, double gloves, face shield, respiratory augmented for AGPs
Fomite risk	Moderate; largely superseded by aerosol risk	High—virus persists days on contaminated surfaces

SARS: Severe Acute Respiratory Syndrome; MERS: Middle East Respiratory Syndrome; ANDV: Andes Hantavirus; PAPR: Powered Air Purifying Respirator; AGP: Aerosol-Generating Procedures.

management depends on preventing contact with infectious body fluids while maintaining safe patient care.

PRACTICAL CONSIDERATIONS FOR ANESTHESIA TEAMS

Early recognition, supportive care, and meticulous infection prevention remain the cornerstones of management because no pathogen-specific therapy or licensed vaccine currently exists for Bundibugyo virus disease.^{1,8} Every anesthesia department should ensure familiarity with current recommendations from the Centers for Disease Control (CDC) for personal protective equipment (PPE), including supervised donning and doffing, as self-contamination during PPE removal remains a preventable source of occupational exposure.^{5,9} For confirmed patients and clinically unstable suspected patients, the CDC recommends full barrier protection including double gloves, an impermeable gown or coverall, boot or shoe covers, respiratory protection with an N95 respirator or, preferably for higher-risk airway procedures, a powered air-purifying respirator, and full face and head protection.^{5,9}

When invasive procedures are unavoidable, careful planning is essential. Limit personnel, assign roles before patient arrival, prepare all

equipment in advance, and emphasize first-pass success during airway management. When clinically appropriate, regional anesthesia may reduce airway manipulation but does not eliminate the need for meticulous barrier precautions or sharps safety.¹ Disposable equipment should be used whenever feasible, and reusable equipment requires rigorous decontamination.

In the operating room, environmental cleaning after care of a patient with suspected or confirmed EVD should include immediate removal and disinfection of any visible blood or body fluid contamination, routine cleaning and disinfection of high-touch and other hard non-porous anesthesia and monitoring surfaces with a U.S. Environmental Protection Agency (EPA) registered hospital disinfectant effective against Ebola (CDC List Q or List L), and disposal of contaminated single-use materials, linens, and cleaning byproducts as Category A infectious waste according to institutional protocol.¹⁰ Porous items that cannot be effectively disinfected should be removed from the care area or discarded if contaminated, and the PPE doffing area should be cleaned regularly—at least daily and after gross contamination—by personnel trained in Ebola PPE and environmental infection control.¹⁰

Table 2. Exposure Risk Stratification for Ebola Virus Disease.^{5,11}

Category	Description	UKHSA Example Scenarios	Anesthesia Examples
Category 5 Very High Risk	Unprotected high-risk or prolonged contact with case or infectious material	- Household or overnight contact while case was symptomatic - Needlestick injury - Confirmed splash on mucous membranes or broken skin	- Unprotected direct laryngoscopy/intubation of EVD patient with copious oral secretions - Needlestick with EVD-contaminated needle - Blood or secretion splash to eyes, nose, or mouth during airway management
Category 4 High Risk	Unprotected close (≤ 2 m) or direct contact with case or infectious material	- Direct skin contact with case or body fluids without PPE (or PPE breach) - Unprotected sexual contact with recovered case within 3 months - Skin/mucous membrane exposure to contaminated environment without PPE - Unprotected handling of clinical or laboratory specimens - Passengers seated directly next to case on plane	- Bag-mask ventilation of EVD patient without PPE - Inserting nasogastric or orogastric tube without PPE - Handling soiled breathing circuit or suction tubing without gloves - Transporting intubated EVD patient without appropriate PPE
Category 3 Medium Risk	Unprotected close (≤ 2 m) contact but no direct contact with case or bodily fluids	- Same room as symptomatic case without direct contact - Passengers one seat in front of or behind case on plane - Cabin crew serving in area where case was seated	- Present in OR during EVD patient procedure without direct patient contact and without PPE - Preoperative assessment of symptomatic EVD patient conducted in same room without PPE - Assisting with transporting unprotected symptomatic patient without direct contact
Category 2 Low Risk	Protected direct or close contact with correct PPE, no known breach	- Direct contact with case or body fluids outside controlled environment, correct PPE worn with no breach - Exposure to contaminated environment while wearing correct PPE with no breach - Non-CL4 laboratory staff handling specimens with correct PPE and no breach	- Intubation and airway management wearing full recommended PPE with no known breach - Post-case environmental cleaning in correct PPE - Handling breathing circuit or anesthetic equipment with appropriate PPE intact - Transporting EVD patient while wearing full PPE with no breach
Category 1 Very Low Risk	Protected contact in controlled environment (HCID unit) OR unprotected contact before symptom onset	- Household contact while case was asymptomatic (before symptom onset) - Clinical staff in Trexler/HCID unit with correct PPE and no breach - UKHSA CL4 laboratory staff with no PPE breach	- Anesthesia professional working in designated HCID unit with full PPE no breach - Preoperative assessment of patient who was asymptomatic at time of contact but later confirmed EVD - Anesthetic review in controlled setting with Trexler isolator and correct PPE

HCID: High Consequence Infectious Disease; EVD: Ebola virus disease; PPE: Personal protective equipment; OR: Operating room; Trexler unit: Trexler Patient Isolator; UKHSA: UK Health Security Agency; CL4: Containment Level 4.

PREPAREDNESS BEGINS BEFORE THE PATIENT ARRIVES

Fortunately, most anesthesia professionals will never care for a patient with EVD. Nevertheless, the current Ebola outbreak reminds us that preparedness must be tailored to the pathogen. COVID-19 emphasized airborne precautions; Ebola underscores the importance of barrier protection, contact precautions, and dis-

ciplined PPE practices. Simulation, team training, and familiarity with institutional protocols before the first patient arrives remain the most effective ways to protect patients, colleagues, and ourselves.

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