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**Stephen Derrig**

## On-the-Job Exposure to HIV

**A firefighter/paramedic, occupationally infected with HIV, shares hard-won lessons**

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*The following is a revised version of the article that originally appeared in *Advances in Exposure Prevention*, which was published before Steve went public with his HIV infection. This version brings the information about Steve and his family up to date.*

In 2000, Steve Derrig was a 32-year-old firefighter and paramedic living in Akron, Ohio. That was the year he made a shattering discovery: he was infected with HIV.

In his nine years as an emergency worker, Steve had had frequent on-the-job exposures to patients' blood and body fluids (BBF), and he had no other risk factors for HIV. At the time of his diagnosis, he had been married for 10 years; he and his wife, Melissa, have two children.

In Akron, firefighters are trained as paramedics and respond to both fire and medical emergency calls. Steve estimates he spent approxi-

mately 75% of his time responding to paramedic calls. He typically worked in inner city neighborhoods and treated numerous stabbings and shootings.

In November 1999, he developed an afebrile dry cough with shortness of breath. His condition worsened over the next month, and he went to see a doctor in early January of 2000. The doctor diagnosed pleurisy and prescribed an anti-inflammatory, but Steve's health continued to deteriorate. He was then put on a course of prednisone, but that, too, had no effect. He had numerous chest x-rays and two bronchoscopies, all of which were normal. In late January, Steve was admitted to the hospital for extensive testing and was seen by a leading pulmonologist, who diagnosed asthma and put Steve on inhalers. A month later, he could not walk even a short distance without gasping for air, and had lost 20 pounds.

On March 7, 2000, Steve was admitted to the emergency room in critical condition. A cardiologist in the ER, who had previously worked as a paramedic, thought Steve should have an HIV test; no other doctor had suggested this. Two days later, as Steve was about to be put on a ventilator and have a lung biopsy, his HIV test results came back positive: he had pneumocystis carinii pneumonia (PCP) and full-blown AIDS. His CD4 (t-cell) count was below 200 cells per cubic ml of blood, and his viral load was over 300,000 copies per ml of blood. (A few weeks later, he was also tested for hepatitis C; the

result was negative. He had already been vaccinated for hepatitis B.) His caregivers couldn't say for sure when he was infected.

Immediately after Steve's diagnosis, his wife was tested for HIV as well. The result was negative, and she remained HIV-negative at a one-year follow-up test.

Steve routinely wore gloves on the job, and sometimes safety glasses, but rarely, if ever, put on fluid-resistant gowns or goggles. And he says that is typical for most EMTs he knows.

Steve does not recall a needlestick injury that might have caused his infection, but during his nine years as a paramedic he sustained massive BBF exposures on a number of occasions. He had only one exposure on record—a patient with tuberculosis who coughed in his face—but he says that during most of his paramedic runs, which he estimates at around 5,000, he sustained some kind of BBF exposure. He believes he might have been infected in 1995, when he had a severe case of poison ivy with open sores and blisters on his forearms. He took prednisone, an immunosuppressant, to control the inflammation. Steve's supervisor took him off the medical unit for a day because of his sores.

Steve remembers treating a patient in 1995 who was stabbed in the chest in a park known for the high-risk groups that congregated there; the patient had massive bleeding. On another occasion, Steve sustained an exposure while delivering the baby of a crack-addicted mother; during

the delivery, the mother's water broke in his face. (He is uncertain of the year this occurred, and can't locate the patient's records, which might allow him to check the mother's HIV status.) He also recalls a patient spitting in his eye with bloody saliva.

One week after his AIDS diagnosis, Steve began a three-drug treatment regimen (a protease inhibitor and two nucleoside reverse transcriptase inhibitors); he continues to take these drugs. His health is now fairly good, though he gets fatigued easily and has diarrhea from the drug cocktail, and arthritic joint pain from his infection.

In September 2000, Steve went back to full-time work as a firefighter, but his supervisor allowed him to move to a different station so he would only have to perform firefighting duties. He wanted to avoid working as a paramedic because of the risk to his com-

promised immune system.

Steve filed a workers' compensation claim shortly after his diagnosis. He could not prove through documentation (i.e., an exposure report and follow-up blood work) that he had been infected with HIV on the job; instead, his attorney tried to demonstrate to the workers' compensation board that paramedics are at high-risk for BBF exposures, and also that, because such exposures are a routine part of the job, most of the time they don't report them. Steve notes that many patients are treated by paramedics at the scene but never taken to a hospital—which makes it even harder to track them later if an occupational infection occurs.

The workers' compensation board ruled in his favor. But his employer filed several appeals and the case wasn't finally settled until July 2002, when the

city decided to drop its court challenge.

Now Steve can rest assured that his medical expenses—including the drug therapy to suppress the virus, which costs around \$1,500 a month—will be covered. Steve also received a small lump-sum payment from the workers' compensation provider for permanent partial disability resulting from his HIV infection. He was determined to be 40% impaired, based on factors such as side effects from the drugs he takes, arthritis and other conditions that are caused by his disease, and the fact that he can't have any more children.

In March 2003, Steve decided to permanently retire from his work as a firefighter. Even though he was no longer performing duties as a paramedic and had fewer exposures to patient blood and body fluids, he was still being exposed to carcinogens, and to airborne pathogens such as tuberculosis. He decided it wasn't worth the risk to his immune system, and gave up a job to which he had been devoted for 10 years. His most recent HIV tests have brought good news: he now has an undetectable viral load (under 50) and his t-cell count is 600, the highest it's ever been. He has felt better since leaving the job—less stressed and better rested. He now works part-time in a family business, and spends as much time as he can with his children.

In the fall of 2002, Steve and Melissa agreed to be interviewed for an article in the *Akron Beacon Journal*; up until that point, Steve had revealed his HIV status to only a small circle of friends and family members. In the interview, Steve expressed his hope that his story would help "shatter the AIDS stigma" and encourage firefighters and emergency care providers to be tested for HIV, as well as hepatitis B and C, on a regular basis. He notes that if he had had annual tests for HIV and his infection was detected earlier, his illness might not have progressed to the critical stage it reached in March 2000. His unde-

## Figure 1. Sharps Injuries to Paramedics in the Field (20 injuries)

*Of 43 needlestick and sharp-object injuries to paramedics/EMTs reported in the EPINet database (1993-2000), 20 occurred in the field (at an accident scene, in a home, or in an ambulance or helicopter during patient transport). The others occurred in a hospital or health care facility. The data below is for the 20 field-based injuries; for comparative purposes, we also provide EPINet data for injuries to health care workers (HCWs) in hospitals and other health care facilities (23,692 injuries). For paramedics in the field, 55% of injuries were caused by blood-filled needles, compared to 24% for facility-based HCWs. (Injuries to paramedics in hospital settings will generally have similar characteristics to those of ED personnel.)*

### Devices causing injury (top 3 devices):

Paramedics		Hospital HCWs	
IV catheters	50%	Disposable syringes	30%
Lancets	15%	Suture needles	12%
Phleb. needles	10%	Scalpel blades	7%

*(The fact that three devices account for 75% of injuries may reflect the smaller variety of devices carried in medic bags and on ambulances.)*

### Original purpose of devices causing injury (top 3):

Paramedics		Hospital HCWs	
Start IV/setup heparin lock	45%	Injection (IM/SQ)	17%
Fingerstick/heel stick	15%	Draw venous blood	15%
Draw venous blood sample	10%	Suturing	13%

### When injury occurred:

	Paramedics	Hospital HCWs
Other after use, before disposal*	40%	22%
During use of item	20%	28%
While putting item in disposal container	15%	7%

*(\*The high percentage of injuries in this category for paramedics may be due to the fact that it can be difficult to access a sharps container in an ambulance, especially during a code or severe trauma, or the sharps container may quickly become overfilled—again, especially during a code.)*

tected HIV put his wife and children at risk as well: “Without question, the scenario could have been unbelievably worse. We could have been a family of four—all with AIDS. Maybe the next guy in line won’t be as lucky as me.”

When asked how paramedics and EMTs can better protect themselves, Steve says it’s important to get over the mindset that “it can’t happen to me”: “Personal protective equipment—gloves and goggles especially—and exposure reporting need to be taken much more seriously.” He says that while PPE such as gowns and safety glasses were typically available in his truck or ambulance, they were rarely worn; he doesn’t recall goggles being available at all. “EMTs and firefighters need access to better eye protection, such as goggles, but they also need to get in the habit of putting

on protective equipment. It’s hard to anticipate what you’ll encounter at a scene; you need to be prepared *before* you get out of the truck.”

Steve advises EMTs to “take all the precautions that you have at your disposal. Don’t take unnecessary risks; when you anticipate massive exposures, make sure you’re well protected before rushing into the scene.” But, he admits, it can be difficult to take that extra step when the situation is critical.

Steve also says it’s important to take seriously open lesions on your skin. “In our department, we weren’t supposed to be working if we had open sores. But in the summer, especially, they’re very common, and our uniform shirts had short sleeves. And that can make you more vulnerable if you have an exposure.”

The risk of exposure to bloodborne pathogens is, he says, “just as high—if not higher—as for emergency department workers in hospitals; yet so often we are much more poorly protected.” And the protocol for exposure reporting is often not as well established for EMS workers as it is for hospital-based workers.

The CDC’s statistics on documented and possible cases of healthcare workers with occupationally acquired HIV/AIDS bears this out. There are no paramedics listed among the documented cases (those in which there was a reported exposure and a complete sequence of follow-up blood work demonstrating seroconversion). However, 12 paramedic cases are listed in the “possible” category; these are ones where healthcare workers report a history of occupational exposure to blood or body fluids and no other risk factors for HIV infection, but where infection could not be attributed to a specific exposure.

As is clear from Steve’s case, this can put them at a significant disadvantage when they try to obtain workers’ compensation for an occupational infection. For this reason, many states have now passed “presumptive eligibility” legislation for healthcare and emergency workers. It means that workers in these fields who contract certain diseases, such as HIV and hepatitis C (and, in the case of firefighters, certain types of cancer), are presumed to have acquired the diseases on-the-job; it makes getting workers’ compensation much easier.

Steve has worked on efforts to pass a presumptive eligibility law in Ohio; legislation has been introduced, but so far has not moved forward. “When you come on the job, you are told that you will be taken care of if you become injured or sick from the job,” Steve commented to the *Akron Beacon Journal*. “When you are in your most vulnerable state, you shouldn’t have to fight.” □

## Figure 2. Blood and Body Fluid Exposures to Paramedics in the Field (30 exposures)

Of 55 blood and body fluid (BBF) exposures to paramedics reported in the EPINet database (1993-2000), 30 occurred in the field (at an accident scene, in a home, or in an ambulance or helicopter during patient transport). The data below is for the 30 exposures in the field; for comparative purposes, we provide EPINet data for BBF exposures to health care workers (HCWs) in hospitals and other health care facilities (6,318 exposures).

According to paramedic protocols, goggles, faceshields and gowns are required for certain procedures. However, paramedics appear to use personal protective equipment (with the exception of gloves) infrequently: 96% of paramedic BBF exposures in the field were to unprotected skin, compared to 84% for hospital-based HCWs. In this data, no paramedics in the field had on goggles when the exposure occurred, and only one had a faceshield on. Note that the least protected body part (eyes) was the one that had the highest number of reported exposures.

### BBF came in contact with\*:

	Paramedics	Hospital HCWs
Eyes	40%	53%
Mouth	33%	11%
Non-intact skin	33%	19%
Intact skin	30%	43%

(\*More than one part or area can be selected.)

### Body fluids involved:

	Paramedics	Hospital HCWs
Blood/blood products	93%	66%
Vomit	20%	4%
BF other	10%	24%

### Barrier items worn at time of exposure:

	Paramedics	Hospital HCWs
Gloves (single/double pr.)	90%	67%
Faceshield	3%	3%
Goggles	0%	3%

### Other comparisons:

· 23% of BBF exposures to paramedics in the field exposed the worker to BBF for 15 minutes to over an hour; this compares to 7% for facility-based HCWs.

· 70% of BBF exposures to paramedics in the field were the result of direct patient contact, compared to 52% for facility-based HCWs.