
Coates' Canons Blog: UPDATED: Blood Exposures and NC Communicable Disease Law

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What happens when a person has an accidental exposure to someone else's blood? This is one of my most frequently asked questions. I wrote about it in 2010, but it is time for an update. Since my original post, the bloodborne pathogen rules have been expanded to include hepatitis C virus, and I've encountered some new questions that I'd like to address. It's probably also time to drop the dated reference to vampire literature, as popular culture seems to have moved on to zombies.

This post retains the question and answer format of the first post, with a few new questions and some expanded answers. Section 1 describes what bloodborne pathogens are and the two sets of rules that address them. Section 2 provides an introduction to the rules that address occupational exposures. Section 3 goes into more detail about the rules that address non-occupational exposures.

Section 1: Bloodborne Pathogens & the Rules that Address Them

What are bloodborne pathogens and why do we have rules about them?

A pathogen is an agent that can cause disease, such as a virus or bacterium. A pathogen is considered bloodborne if it is present in human blood. When one person comes into contact with another person's blood or body fluids, there is the possibility of being exposed to a bloodborne pathogen.

Three pathogens of particular public health significance—human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV)—are addressed in administrative rules that define what constitutes an exposure, and specify the follow-up measures that must occur to prevent or reduce the risk that an infection will be transmitted.

How do bloodborne pathogen exposures occur?

Here are a few examples of the many different ways an exposure might occur:

- A health care worker is accidentally stuck by a needle that has been used on a patient.
- A law enforcement officer is bitten by a person the officer is attempting to arrest.
- A child finds a used syringe in a public park and pricks her finger on the needle.
- A passerby assisting a person who has been injured is exposed to the injured person's blood.

This is not an exhaustive list, but it is sufficient to illustrate that exposures might occur to someone as part of their work (an occupational exposure), or they might occur outside of work (a non-occupational or community exposure). In each case, further analysis is required to determine if the exposure is one that requires follow-up under applicable rules.

Which rules apply to an exposure?

When there is an occupational exposure, occupational safety and health rules (the "OSHA standards") may apply. The OSHA standards are published in the Code of Federal Regulations (29 C.F.R. 1910.1030) and have been adopted by reference in the North Carolina Administrative Code (13 N.C.A.C. 07A .0301(b)).

When an exposure occurs in the community, or to a person who isn't covered by the OSHA standards, the state communicable disease rules apply. The state rules are in the communicable disease control measure rules for HIV, hepatitis B, and hepatitis C.

How are the two sets of rules similar? How are they different?

The OSHA standards and the state communicable disease rules are similar in several important ways:

- They define exposure similarly.
- Both sets of rules require post-exposure evaluation and follow-up. Key components of the follow-up include testing the source person for HIV, HBV, and HCV, and offering post-exposure testing, information, and sometimes treatment to the exposed person.
- The rules address only nonsexual exposures. They are designed for situations in which a worker or other person has an unintentional contact with blood or body fluids that occurred in the absence of (or despite the use of) universal precautions. There are other communicable disease control measures designed to protect individuals from acquiring a bloodborne pathogen through sexual contact.
- Both sets of rules are a type of universal precaution, so they are applied without regard to whether a source person is suspected of being infected.

A key difference between the two rules is the determination of who is responsible for doing what. In an occupational exposure, the workplace should have a written exposure control plan that sets out the policies and procedures for following up with the employees involved. In community exposures, follow-up duties fall on the attending physicians of the exposed person and the source person. In practice, in community exposures local health departments often step into the role assigned to one or both of the attending physicians, either because one or both parties lacks a physician, or because a party's physician is unfamiliar with the bloodborne pathogen rules and seeks the department's assistance.

Section 2: Occupational Exposures

Which employers must comply with the OSHA bloodborne pathogen standards?

The OSHA standards apply to employers with one or more employees who have reasonably anticipated occupational exposure—defined as skin, eye, mucous membrane, or parenteral contact with blood or “other potentially infectious material”—as part of the performance of the employee's duties. “Other potentially infectious materials” (OPIM) includes any body fluid that is visibly contaminated with blood, as well as specified other body fluids.

What do the OSHA standards require?

The OSHA standards require employers to take the following steps proactively, regardless of whether exposure incidents have already occurred:

- Develop and annually review a written exposure control plan that identifies workers who may have an exposure and addresses how exposures may be eliminated or minimized.
- Implement universal precautions, in which all human blood and other body fluids captured by the OPIM definition are treated as if they were known to be infectious.
- Provide appropriate personal protective equipment to workers with reasonably anticipated exposures.
- Make hepatitis B vaccination available to all workers who may have an occupational exposure.

When there is an exposure incident, additional actions are required. The OSHA standards define an exposure incident as “a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or OPIM that results from the performance of an employee's duties. Follow-up must include identifying the source individual—the person whose blood or OPIM was involved in the exposure—and testing the source individual for HIV and HBV. The employer must also test the exposed person if he or she consents to testing, and must offer post-exposure prophylaxis and counseling. This follow-up must be provided at no cost to the employee.

Where can I find out more about the OSHA standards?

I suggest you start with OSHA's quick reference guide. It includes links that will take you directly to the occupational safety and health rules and other resources.

Section 3: NC's Rules for Non-Occupational (Community) Exposures

Which exposures are covered by the NC communicable disease rules?

Bloodborne pathogen exposures that are not addressed by the OSHA standards are covered by North Carolina's communicable disease rules. Three separate sections of the communicable disease rules address bloodborne pathogens: the rules establishing control measures for HIV, for hepatitis B, and for hepatitis C. These separate provisions are similar but not identical. In practice, they should be considered simultaneously when responding to an exposure incident.

What constitutes an exposure incident under the communicable disease rules?

A bloodborne pathogen exposure incident occurs when a person experiences either:

1. A needlestick, or
2. Another type of nonsexual contact in which the blood or body fluids of one person (the source person) comes into contact with the nonintact skin or mucous membrane of another person (the exposed person), if the contact is of a nature that would pose a significant risk of transmission of a bloodborne pathogen if the source person were infected.

Can you break that second part down?

Sure. For an event other than a needlestick to be considered an exposure, several criteria must be met. First, one person's blood or body fluids must make contact with another person's mucous membrane (such as the mouth or nasal passages) or nonintact skin (such as skin that has a cut or abrasion). Second, the contact must be nonsexual in nature. Third, the nonsexual contact must be of a type that *would* create a significant risk of transmission *if* the other person were infected. The conditional language of "would" and "if" reflects the rules' universal precaution approach: when there is an exposure, the rules do not apply only to individuals who are known or suspected of being infected with a pathogen. Rather, they assume the possibility that a bloodborne pathogen is present, and require consideration of whether the exposure was of a type that would create a significant risk of transmission.

What constitutes a significant risk of transmission?

This is determined on a case-by-case basis, taking into account current scientific knowledge on disease transmission risk. The determination must consider information about the exposure, such as whether it involved mucous membranes or non-intact skin, as well as information about the type and volume of the body fluid involved. It is not common in community exposures for there to be information about the concentration and virulence of a known pathogen in the body fluid, but if that information happens to be available, it must also be taken into account.

Who decides whether an incident creates a significant risk of transmission?

The rules do not directly address this question. However, they require the weighing of factors that must be understood in light of current knowledge about bloodborne disease transmission. It is also worth noting that the rules put the duty of taking appropriate follow-up steps on the physicians of the parties involved in an exposure incident. This suggests that the determination of whether a given incident creates a significant risk of transmission should be made by a health care provider or public health professional, who either has the relevant knowledge or is able to obtain and interpret information provided by others with relevant expertise.

What happens after an exposure incident occurs?

The rules prescribe specific follow-up steps. A physician or local health department determining which follow-up steps to take must first identify the source person and the exposed person, and determine if the source person is known or unknown. If the source person is known, the follow-up that is required includes testing the source person for HIV, HBV, and HCV.

What is the distinction between source and exposed person?

The exposed person is the person whose nonintact skin or mucous membrane comes into contact with another person's blood or body fluids. A source person is a person whose blood or body fluids come into contact with another person's mucous membrane or nonintact skin.

That seems straightforward. Why is this a hard question?

It isn't always a hard question, but sometimes it's a question that produces more than one answer, or an answer that people may find counterintuitive. Let's compare two examples. The first is about as straightforward as these incidents ever get:

Bleeder has a bad nosebleed. Bystander offers help. In the course of assisting Bleeder, Bystander gets some of Bleeder's blood on her hands, where she has broken skin from a cut that is healing.

In this scenario, Bleeder is the source person and Bystander is the exposed person. Now consider this:

Biter bites Victim, breaking Victim's skin and drawing blood. Biter's mouth, a mucous membrane, is exposed to Victim's blood.

In this scenario, Biter is an exposed person and Victim is a source person. Sympathy for Victim can make this result feel counterintuitive—especially when it means that Victim has to submit to blood tests in the follow-up steps. I think it becomes more intuitive when I remind myself that the focus of the bloodborne pathogen rules is on preventing disease transmission, without regard to who is at fault in creating the exposure incident.

Adding to the complexity, it is possible for a person to be both a source person and an exposed person. The biting example could illustrate this. It's possible (not certain, but possible) that Victim is an exposed person as well as a source person, because Victim has been exposed to Biter's saliva, a body fluid. Whether Victim is considered an exposed person would depend on a determination of whether exposure to saliva created a significant risk of transmission. See the previous Q&As on that issue.

What happens if a source person is unknown?

This is a possibility. I gave an example earlier that illustrates this – the example of the child who finds an improperly disposed hypodermic needle and pricks her finger. In incidents such as that, it is assumed that the needle could have been used, but no one knows by whom, so the source person is unknown.

When the source person is unknown, the follow-up steps that should be taken are all focused on the exposed person. The specific follow-up steps are found in the separate rules for HIV, HBV, and HCV, but they should be carried out concurrently to the extent possible.

HIV – The exposed person's attending physician must give the exposed person information about the risk of HIV transmission and must offer HIV testing as soon as possible after exposure, and then again at reasonable intervals for up to one year. The rules do not address any other follow-up steps, such as offering HIV prophylaxis, but of course health care providers should practice in accordance with the standard of care and take additional steps or make referrals as needed.

HBV – Further treatment is not required if the exposed person has completed the hepatitis B vaccination series. In the absence of documentation of vaccination, the HBV vaccine series should be offered.

HCV – When the source person is unknown, the exposed person's attending physician must advise the exposed person to seek testing for hepatitis C as soon as possible, and again 4 to 6 months after the exposure. The exposed person is not required to *be* tested – the requirement is that he or she *be advised to seek* testing.

What happens if the source person is known?

When the source person is known, the follow-up that is required is more complicated and involves both the source person and the exposed person. In general, there are three activities that must occur: notification, testing, and follow-up care.

Notification and testing – The exposed person’s attending physician or health care provider must notify the source person’s attending physician that an exposure has occurred. When the source person’s physician receives the information, the physician must discuss the exposure with the source person, and unless the source person’s infectious status is already known, must test the source person for HIV, hepatitis B, and hepatitis C. The source person’s physician must notify the exposed person’s physician of the test results, and the exposed person’s physician must then notify the exposed person. In other words, the exposed person will ultimately be told the results of the source person’s tests. The physician must also instruct the exposed person that the information must be kept confidential.

Follow-up care – After the notification and testing process is completed, the exposed person’s physician must provide specific follow-up care for each of the three pathogens of concern.

For HIV, the physician must offer the exposed person an HIV test as soon as possible after the exposure, and then again at reasonable intervals for up to a year. If it is determined that the source person was infected with HIV, the exposed person should be informed of the HIV control measures and should be offered or referred for other treatment in accordance with the standard of care.

For HBV, the follow-up depends on the exposed person’s vaccination status. If the source is infected and the exposed person has not been vaccinated, the exposed person should be given hepatitis B immune globulin (HBIG) immediately, and should begin the HBV vaccine series within seven days. If the source person is infected and the exposed person has been vaccinated, then the exposed person should be tested for the level of antibodies that are present in his or her blood. If the antibodies are below a certain level, the person should be offered HBIG and re-vaccination no later than seven days after exposure. (A level is specified in the communicable disease rules, but it is also wise to check with state communicable disease experts for recommendations regarding current standard of care and best practices.) The rules do not address what to do if the source is negative and the exposed person is unvaccinated, but because hepatitis B vaccine is now universally recommended, it would be wise to offer or refer the individual for the vaccine.

For HCV, if the source person is infected, the exposed person’s attending physician must advise the exposed person to seek HCV testing as soon as possible and again 4 to 6 months after exposure. The physician must also inform the exposed person of the hepatitis C control measures. Treatment for hepatitis C is rapidly evolving, so it is a good idea to consult with a communicable disease expert for the most up-to-date recommendations for the exposed person.

Do the North Carolina rules require testing for conditions other than HIV, HBV, and HCV?

Not at present. It is conceivable that a new illness will emerge that can be detected in blood, and it is also possible that the CDC will publish guidelines that recommend testing for in the event of an exposure. CDC recommendations are incorporated by reference into North Carolina communicable disease control measures for emerging illnesses. If that happens, there could be a new testing requirement.

If there is no state rule or CDC guidelines recommending a specific test, then the test is not required by North Carolina law, but a source person could be asked to consent to testing if it is believed to be important in a particular case. I think it’s important to consider this carefully and remember that these tests have human and financial costs associated with them. I would discourage a practice of routinely asking all source persons to consent to testing for everything imaginable.

What if a known source person refuses to be tested?

The rules state that a source person may be tested with or without consent, so long as the test can be done with safety to the source person and the health care provider. In practice, providers should proceed with care if a source person refuses. A provider may try to persuade a source person to have the test, but should not restrain the person and force it. Instead, a source person who refuses testing should be reported to the local health director, who has legal authority to obtain information from other sources. The health director also has authority to enforce the communicable disease rules by instituting an action for injunctive relief in superior court (G.S. 130A-18) or seeking a misdemeanor charge against a person who refuses to comply with the rules (G.S. 130A-25; 130A-144(f)).

There is a lot of health information going back and forth in these situations. What about confidentiality?

The short answer is that the two confidentiality laws that are most likely of concern, the HIPAA Privacy Rule and a state communicable disease confidentiality law (G.S. 130A-143), both allow the specific disclosures of information that are described here. However, they may not allow additional disclosures—as always, it depends—so everyone involved should proceed with caution and not make additional disclosures without being sure they're permitted. If you have a situation you need to talk through, or if you simply want the “show the math” longer answer to this question, give me a call and I can talk it through with you and/or refer you to resources.

What is the 24-hour hold for criminal defendants involved in a potential exposure incident?

G.S. 15A-534.3 authorizes a judicial official conducting an initial appearance or first appearance to order a defendant detained for up to 24 hours, if there is probable cause that someone had a nonsexual exposure to the defendant that poses a significant risk of transmission of HIV or hepatitis B. It states that the 24-hour hold is for investigation by public health officials, and for HIV and HBV testing if public health officials require it pursuant to G.S. 130A-144 and G.S. 130A-148.

The language of G.S. 15A-534.3 is just different enough from the language of the bloodborne pathogen rules to create the occasional headache for those of us interpreting it, but if you read it in conjunction with the two statutes it cites and the rules implementing those statutes, I think its purpose becomes clear. The two statutes cited authorize administrative rules for communicable disease control measures and HIV testing. The rules implementing those statutes include the bloodborne pathogen rules described in this post. The intent appears to be to make sure a defendant is detained for long enough to allow a public health official to determine if the testing described in the bloodborne pathogen rules is required. How does a public health official make that determination? The same as they would for any other community exposure—by determining if there was an exposure incident that would create a significant risk of transmission if the source person were infected.

The statute does not authorize the judicial official to order testing in these cases; it specifically conditions testing on public health officials requiring it pursuant to the communicable disease laws cited.

For more information about this provision of the law, see this post by Jeff Welty on the NC Criminal Law Blog.

Is that everything?

Actually no, but I think it's more than enough for a blog. Please feel free to call or email me with your bloodborne pathogen law questions.

Links

- canons.sog.unc.edu/blood-exposures-and-disease-control-law/
- www.ecfr.gov/cgi-bin/text-idx?SID=05cd6b4bf944fcf33ce10dbc856328fc&node=se29.6.1910_11030&rgn=div8
- reports.oah.state.nc.us/ncac/title%2013%20-%20labor/chapter%2007%20-%20office%20of%20occupational%20safety%20and%20health/subchapter%20a/13%20ncac%2007a%20.0301.pdf
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 - www.ncleg.net/gascripts/statutes/statutelookup.pl?statute=130a-18
 - www.ncleg.net/gascripts/statutes/statutelookup.pl?statute=130A-25
 - www.ncleg.net/gascripts/statutes/statutelookup.pl?statute=130A-144
 - www.hhs.gov/sites/default/files/ocr/privacy/hipaa/administrative/combined/hipaa-simplification-201303.pdf
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 - nccriminallaw.sog.unc.edu/officers-exposed-to-communicable-diseases/