University of Washington

DEPARTMENT OF GLOBAL HEALTH

GHCE

Global Health Clinical Elective

GUIDE TO YOUR CLINICAL ELECTIVE IN

UGANDA

Acknowledgements:

Special thanks to Susan Nassaka for her ongoing support of
University of Washington medical students.

Disclaimer:

This booklet is provided as a service to UW students going to Uganda, based on feedback from previous students. The Global Health Resource Center is not responsible for any inaccuracies or errors in the booklet's contents. Students should use their own common sense and good judgment when traveling, and obtain information from a variety of reliable sources.

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CONTACT INFORMATION

Uganda

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U.S. Embassy		1577 Ggaba Rd, Kampala	041-233-231 041-259-791	http://kampala.usembassy.gov
Emergency			999	

Ms. **Susan Nassaka** is your main point of contact in Uganda. She helps coordinate student visits, and will be assisting you with logistics. Her office is on the medical school campus at Makerere University, across from Mulago Hospital. Please communicate with her early on, and keep her informed of your travel plans. She will usually send someone to pick you up at the airport, and help you arrange housing. She will also be coordinating your clinical rotations. She works closely with the GHRC.

CONTACT INFORMATION - U.S.

	Name	Address	Telephone	Email or Website
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Insurance	On Call International		call 1.855.464.8971 or collect +1.603.328.1358	http://student.uwsearchlightportal.com studentclaims@oncallinternational.com
Hall Health Travel Clinic	Anne Terry, MN, ARNP	315 E. Stevens Circle Box 354410 Seattle, WA 98195	+1-206-543-8915 +1-206-685-1011	travel@uw.edu
Post-Exposure Prophylaxis	Harborview Madison Clinic	325 Ninth Ave Box 359930 Seattle, WA 98104	1-888-448-4911 (CDC hotline) +1-206-744-5100 (clinic)	http://depts.washington.edu/madclin/providers/guidelines/pep_occ.html
Ugandan Embassy in U.S.	-	5911 16th St SW Washington D.C. 20011	1-202-726-7100 (phone) 1-202-726-1727 (FAX)	http://ugandaemb.org/index.html

ENTRY REQUIREMENTS

- You must have a **valid U.S. passport** that won't expire for at least 6 months.
- You will need a **Ugandan Visa**, available at the Entebbe Airport upon arrival, or from the Ugandan Embassy before departure. Visa applications are available on the embassy website, and turn-around time is generally quite rapid. A three-month Visa costs $50.
- **Yellow fever certification**: Yellow fever vaccination is recommended by the CDC for all travelers to the country. It is also required if you are coming from an endemic area (such as a neighboring country). It is not required if you are coming directly from the U.S.

ABOUT YOUR ELECTIVE

Mulago Hospital is the country's premier academic teaching hospital, and one of only two national referral hospitals. It was founded in 1913 by British missionary Sir Albert Cook as a treatment center for sexually transmitted diseases and sleeping sickness, and grew to become the country's largest hospital. It is the main teaching hospital for the medical school at Makerere University, known as the Harvard of East Africa until Idi Amin began targeting academics as potential enemies, and allowed it to fall into ruin. During the past several decades, Makerere has slowly fought its way back, and numerous international collaborations have helped establish it as a major center for research, particularly on HIV. Mulago hospital, however, remains underfunded and understaffed, and diagnostic capabilities are substandard. The complex, constructed in the 1960s, is enormous, with has 1500 official beds, but an actual capacity of up to 3000 patients. The hospital is divided into various medical and surgical sub-specialties, along with an Emergency ("Casualty") ward. It has been claimed that Mulago's labor and delivery ward has the highest density of human births on the planet, with over 30,000 per year. You will be paired up with 2 or more services during your time in Uganda. Medical teams consist of a Consultant physician, who acts as an attending, House Officers (residents) and medical students. In general, students are expected to do much more procedures and "scut work" than in the U.S., house officers have more autonomy, and patient loads are much higher.

In the infectious disease ward at Mulago Hospital in the Ugandan capital of Kampala, a woman in her early 20s lies on a bed with only a thin sheet to ward off the morning chill. Alone, suffering from complications from AIDS, her few possessions in a cardboard box at her bedside, she has no family to bathe her, bring her food or give her medicine. These are what doctors here call poor "blanket signs." The mere presence—or absence—of a blanket speaks volumes.

Even before they measure the blanket signs, however, the doctors know several things about their patients. They know that as a national government-run referral hospital, Mulago receives the sickest of the sick. They know that more than half the patients in the hospital are infected with HIV. They know that two-thirds of their patients will die in the hospital or within two months of leaving it. And they know that most of their patients are too poor to afford more than the most basic tests and treatments.

Blanket signs will tell them more. The hospital provides patients with a bed. Patients must bring sheets, blankets and pillows, as well as "attendants"—family members who care for them. The doctors have learned that just having a blanket reveals much about a patient's economic status. Of necessity, the patient's ability to pay will drive the treatment regimen. If the patient has no resources, the doctors will prescribe only the drugs that come free from the pharmacy and order only the tests that the hospital provides at no cost.

"Medicine is not all about what you have learned in medical school," said Robert Kalyesubula, M.D., a Mulago resident. "You prioritize. In the context of the limitations you have, what can you best do for this person? What is going to help my diagnosis best? You talk to them so they find a way to get the money, sacrifice a few things. You save the most expensive tests for last, when you really need them."

-- John Curtis, *Yale Medicine*, Winter 2008

Table 2.7 Staff break down of Mulago Hospital

Cadre of staff	Number	Percentage
Senior consultants	28	1.3%
Consultants	32	1.5%
Medical officer special grade	50	2.4%
Medical officers	44	2.1%
Senior health officers	74	3.6%
Intern doctors	100	4.8%
Nurse/midwives	1030	49.6%
Allied health professionals	517	24.9%
Staff not on pay roll	201	9.7%
TOTAL	2076	100

Source: Mulago Hospital and Complex (payroll data 2006).

Table 2.2 Levels of health service delivery

Infrastructure level	Administrative level	Target population	Services provided
HC I	Village	1 000	Community-based preventive and promotive health services. Village Health Committee or similar status.
HC II	Parish	5 000	Preventive, promotive and outpatient curative health services, outreach care.
HC III	Subcounty	20 000	Preventive, promotive, outpatient, curative, maternity, inpatient services and laboratory services.
HC IV	County	100 000	Preventive, promotive, outpatient, curative, maternity, inpatient services emergency surgery and blood transfusion and laboratory services
District	General hospital	500 000	In addition to the services offered at HC IV other general services are provided. It also provides in-service training, consultation and research to community based health care programmes.
Regional	Regional referral hospital	2 000 000	In addition to services offered at the general hospital, specialist services are offered at this level. Such services include; psychiatry, ear, nose and throat (ENT), ophthalmology, dentistry, intensive care, radiology, pathology, higher level surgical and medical services.
National	National referral hospital	24 000 000	These provide comprehensive specialist services. In addition, they are involved in teaching and research.

Source: MoH, Health Sector Strategic Plan 2005/006 to 2010/11.

Country Overview

Introduction

Uganda, "the Pearl of Africa," is a small landlocked African country on the shores of Lake Victoria, the source of the Nile. Shortly after achieving independence from the British in 1962, Uganda experienced a series of political catastrophes that turned it into one of the poorest nations in Africa. It was also one of the earliest African nations to be hit hard by the AIDS epidemic. Today, Uganda is undergoing an impressive economic transformation, and is praised for its success in decreasing the prevalence of HIV infection.

Uganda has a population of around 32 million, divided into over 50 different language and ethnic groups. Over half of the population is under age 15, and the vast majority of the population lives in rural areas. The highest population density is in the southern "fertile crescent" near Lake Victoria, which includes Kampala, the capital city.

Recent History

President Yoweri Museveni

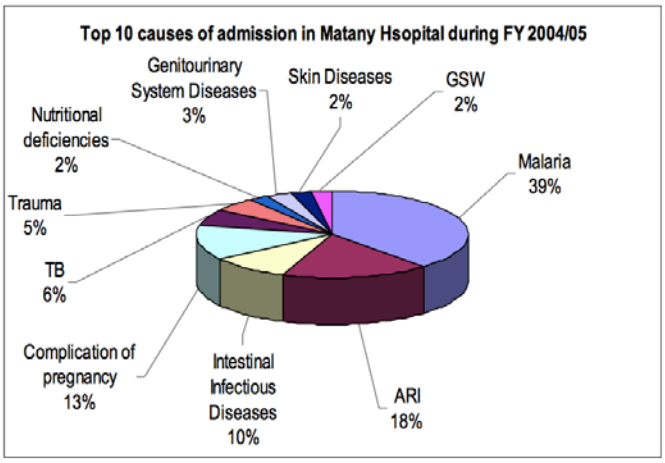
Uganda became an independent country in October 1962 with Milton Obote as Executive Prime Minister. Two decades of military coups and counter-coups followed, during which millions fled the country and over a million people were murdered. The most infamous dictatorship was that of Idi Amin, who seized power in 1971 and for over a decade presided over massive human rights abuses and economic decline. (Among other things, he cast the Indian minority out of Uganda, which resulted in long-lasting damage to the Ugandan economy). Amin's rule ended after his troops invaded Tanzania in 1979. The Tanzanian military repulsed the incursion, and ousted Amin from power. A second brutal Obote regime followed, until he was unseated by the military general Tito Okello in 1985. Six months later, Okello was toppled in turn by the current president, Yoweri Museveni. Museveni has since been re-elected four times, most recently in February 2011, becoming the longest-serving leader in all of East Africa. In April 2011, growing opposition to Museveni's rule, led by Kizza Beysige, let to street protests. Government forces responded with a massive crackdown, during which at least nine people were killed.

The civil war

Beginning in 1996, the northern regions of Uganda were terrorized by the rebel group known as the Lord's Resistance Army (LRA), led by Joseph Kony, a self-proclaimed prophet from God. The brutal crimes and violence against the people in the north, including forced abduction of child soldiers, rapes, and mass executions, resulted in millions of persons fleeing their villages and being relocated into camps for internally displaced people. After being indicted for war crimes by the International Criminal Court in 2009, Joseph Kony and his army crossed the border into the Democratic Republic of Congo, becoming embroiled in the deadliest conflict since World War II, and leading to a new flood of refugees from that region. What began as a Ugandan civil war has effectively escalated into a regional conflict that involves 4 countries: the DRC, the CAR, Sudan, and Uganda. Currently, attacks in northern Uganda are relatively rare, and the IDP camps have been disbanded. U. S. Special Forces are currently assisting Uganda in the hunt for Joseph Kony.

Health and Development

Life expectancy in Uganda is around 57 years for men and 48 years for women. This is a decrease from previous life expectancy, and is largely due to the HIV/AIDS epidemic in the country. The fertility rate in Uganda is one of the highest in the world: 6.15 children per woman, leading to a population growth of 3.2% per year. Under-five mortality rate is 99 deaths per 1,000 live births. Although it is technically free to see a government doctor in Uganda, fees for pharmaceuticals and diagnostic tests are common. As a result, poorer people often wait until their diseases are advanced to seek medical attention. Uganda has a high burden of infectious illnesses, including HIV/AIDS, TB, and malaria, along with many "neglected tropical diseases." One of the major challenges the Ugandan health sector faces is a severe shortage of healthcare workers, especially in rural areas. Currently, 70% of all doctors in the country practice in urban areas, despite the fact that these areas are home to only 27% of the population. In the more rural parts of the country, there is only 1 doctor for every 20,000 people, and 1 nurse to every 80,000. Despite these challenges, Uganda has been fairly successful in decreasing HIV prevalence: strong safe sex campaigns are credited with decreasing the prevalence from over 30% two decades ago to fewer than 7% today.



Source: Annual hospital report, 2005. GSW is gun shot wounds.

Uganda's literacy rate in 2010 was 77% of men and 58% of women. Primary education is free but of variable quality. In 2000, 49% of Ugandan boys had completed primary education, compared with and 25% of girls. This gender disparity continues at the secondary education and university levels. University fees are out of reach for most people, although there are merit scholarships available for a limited number of students.

Economy

Although Uganda remains one of the poorest countries in the world, in recent years it has made strides towards reducing poverty and strengthening its economy. The current gross domestic product (GDP) per capita is $1,250 per person, which is higher than several other sub-Saharan African countries. Uganda is one of 40 countries to have qualified for debt relief through the IMF and World Bank's Heavily Indebted Poor Countries (HIPC) initiative, and has received a total of about $2 billion in debt forgiveness. Uganda has a strong agricultural base to its economy, and exports a number of products, including coffee, tea, cotton, and tobacco. It also has abundant natural resources, including copper, gold, and recently discovered oil. Only about 15% of the Ugandan workforce are paid employees: the rest are either self-employed or unpaid family workers.

Languages

Uganda's official languages are English and Swahili; however, Luganda is the language most widely spoken in Uganda. Swahili is the language of Kenya and Tanzania and is used in the military and along the borders with these counties, but otherwise not commonly heard. English is a colonial legacy, and most educated Ugandans can speak some English. Patients, however, may only have very rudimentary English abilities. Luo and other languages are used in the north and there are dozens of other languages throughout the country. Ateso is commonly spoken in Kumi.

PACKING TIPS

General:

Err on the side of packing light. Don't bring anything that you would be heartbroken if it were lost, stolen, or ruined. Take fewer clothes than you think you will need: you can purchase clothing relatively cheaply locally: this helps make sure that they are more appropriate to local conditions, and helps out the local economy. Most toiletries, and any other items you may have forgotten, can be purchased in Garden City, although they can be expensive.

Documents and other Essentials:

Make copies of important documents and leave them with someone you trust. This includes the front and back of your credit cards. You may also wish to make scanned copies and email them to yourself. Consider bringing an extra set of passport photos with you: they can be handy if you need to replace your passport or get other types of documentation. A laminated, color copy of the first page of your passport can also come in handy. If you plan to purchase/use a Ugandan SIM card for your U.S. phone or a Ugandan cellphone, all SIM cards require a passport photo and copy of your passport so that your SIM card can be registered. The mobile phone companies will keep these items.

Be sure to bring:

- Passport, valid for 6 months
- Travel itinerary, receipt, and copy of e-tickets
- Travel insurance documents
- Credit cards, including the one you used to purchase your airplane ticket
- Medications
- Syllabus and textbooks
- Back-up pair of glasses, if needed
- Sunscreen and mosquito repellent

- Power adapters (Uganda uses British 3-pronged outlets. Power strips and adaptors can be purchased in Garden City and at other locations)
- Flash drive
- Digital camera
- Consider bringing a portable mosquito net, although most hotels have them and they can be purchased locally.
- Bottled water is readily available; bring a filter if you plan on drinking tap water.
- List of your emergency contacts!

Clothing:

People in Uganda tend to dress much more conservatively than in the U.S. Failure to do so, particularly among women, will lower your credibility and can invite a lot of unwanted attention. On the medical wards, white coats are the norm. Men tend to wear pressed shirts and trousers, neckties, and nice shoes. Women tend to wear dresses or slacks and conservative blouses. Women should avoid short skirts and revealing tops. Jeans are acceptable as casual wear in Kampala, Entebbe, and Gulu but are less common in more rural areas.

Lightweight cotton clothing is generally best: synthetic "travel clothing" can be too hot and will melt when they try to iron it. It can get cool at night: a lightweight fleece is recommended. If traveling during the rainy season, consider a lightweight rain poncho. Bring clothes that you are comfortable in, that can survive being scrubbed by hand. Other things to consider:

Swimsuit and towel

Hat (for protection from sun and rain)

Flip-flops or Crocs

Sturdy, comfortable shoes that look nice enough for the hospital

Toiletries:

Remember that you are limited in what you can bring in your carry-on, though not your checked bag. Most basic items will be available for purchased in Garden City, but they can be a bit expensive. Wet wipes can come in handy. A small role of toilet paper or some Kleenex can be a wise investment.

DON'T bring an electric razor, hair dryer, or curling iron unless you bring a transformer, or they will burn out. It may be better to get these locally.

Suggested Personal Medical Supplies:

- Thermometer
- Sunscreen (SPF 30 or higher)
- Insect Repellent (at least 25% DEET or 20% Picardin)
- Malaria prophylaxis
- HIV post-exposure prophylaxis
- Stand-by treatment for diarrhea
- Any medications you normally take
- Band-Aids
- Tweezers
- Acetaminophen (Tylenol)
- Ibuprofen or Naproxen (Aleve)
- Diphenhydramine (Benadryl)
- Pseudoephedrine or phenylephrine (Sudafed)
- Hydrocortisone cream
- Antifungal cream
- Antibiotic ointment

Supplies for the medical wards:

- White coat
- *****Penlight
- Stethoscope
- Otoscope
- Hand sanitizer (lots)
- Gloves
- *****Digital thermometers
- *****Blood pressure cuff
- N-95 Masks
- *****Pulse oximeter?

***Most useful in all wards**

Susan has white coats and scrubs to use while at Mulago but sizes and variety are limited.

Other Suggestions:

Earplugs (Kampala can be very noisy at night)
A laptop is recommended, although they do invite theft.
Flash drive
Digital camera and charger
Small notebooks
Headlamp and small flashlight (electricity goes out frequently)
MP3 music player and/or a small shortwave radio
Extra batteries
Extra food (energy bars, dried fruit, etc.)
Reading material

Suggested Reading:

Brandt Travel Guide

Oxfam Ugandan Country Profile

The Teeth May Smile but the Heart Does Not Forget, Andrew Rice

Dark Star Safari, Paul Theroux

Abyssinian Chronicles, Moses Isegawa

How to be a Ugandan, Joachim Buwebo

MONEY

Uganda is generally a cash-based society, although in some major stores and hotels in cities, VISA cards can be used. You should generally change money in Kampala if you are going to be in a rural area. When going shopping in rural areas, bring smaller denomination bills, as larger ones can be difficult for people to find change for.

The unit of currency in Uganda is the **Ugandan Shilling** (UGX). Currently, **$1 = 3,318 UGX**. It is relatively easy to obtain shillings at **ATM machines** in Kampala and other large cities using a VISA card, provided you alert your bank ahead of time. Banks may change different foreign currency conversion fees, so you may want to check ahead of time. Note that machines that accept MasterCard are difficult to find. Banks will often freeze your account if they notice transactions from Uganda unless you have alerted them ahead of time.

You can exchange cash at several **foreign exchange bureaus** around Kampala. (They give different rates. The ones at Garden City and the Grand Imperial Hotel have been recommended). You get a better rate if you are changing larger denomination bills (i.e. 100's or 50's). Be sure that the bills you want to exchange are less than 5 years old, clean, and unmarked, or they may not be accepted. **Travelers Cheques** are difficult to exchange, and are not recommended.

According to prior students, you ought to be able to obtain housing for 50,000 UGX a night or less, and get by on 50-100,000 UGX a week for food, depending on how much you eat out. Tipping is expected in restaurants that serve tourists.

Barclays is a recommended ATM and is well located at a nearby wandageya.

TRANSPORTATION TIPS

- The "baggage handlers" at the airport can be quite aggressive. Don't let them touch your suitcase unless you want to tip them generously to let go!
- Make sure Susan Nassaka knows when you are coming, and confirm a few days beforehand, so that she can have a driver waiting for you at the airport. The cost of this trip is included in your administrative fees. Suggested tip for the driver is ~20,000 UGX. If a driver is not available, a taxi from Entebbe airport to Mulago hospital costs around 65,000 shillings.
- Do NOT ride the boda-bodas (motorcycle taxis) in Kampala. They are unsafe, and the drivers are often drunk at night. Visiting students have died in boda-boda crashes, and there are reports of the drivers robbing passengers and sexually assaulting women. Use a taxi at night. It is recommended that you take down the number of any taxi drivers that you find trustworthy and have a good rapport with. During the day, taxi-buses are cheap, reliable, and relatively safe. They follow prescribed routes. Ask someone to assist you.
- Avoid travel at night. Use a seatbelt whenever possible.
- Recommended Taxi Drivers:
    - **Haji** (telephone 077 243 588)
      --Susan recommends him highly-though he's a little more expensive than other drivers. He is very reliable.
    - **Deric** (telephone 078 272 9635; 071 613 3335)
      --works with City Cab
      --he is very courteous to both his passengers and to his colleagues, and his cab is very clean
    - **Jackson** (078 208 09407) – Very nice, safe and helpful.

HEALTH AND SAFETY INFORMATION

- Sign up for the U.S. government Smart Traveler Enrollment Program (STEP). This will ensure that you get alerts from the local embassy. There is a lot of useful information on the travel.state.gov website.
- Avoid protests and public demonstrations, which happen somewhat frequently on the Makerere campus, and avoid going out on the streets if there is escalating civil unrest. Call the UW Emergency Line and contact someone in the GHRC if there is trouble or you need to discuss a situation. You are generally safer in a rural site than in Kampala.
- Women should not travel alone and should never be single passengers in boda-bodas.
- Be aware of pickpockets in crowds, such as soccer games, in public vehicles, and in clubs. Use a money belt under your clothes, and limit the amount of cash and valuables you carry on your person.

- Identify theft is common. Take care when doing any online banking or purchases in Uganda. Be sure to always log out of your email. Avoid using credit cards except with reputable businesses such as major airlines and hotel chains.
- Verbal sexual harassment is common, particularly for young single women traveling alone. Wearing modest clothing and a wedding-style ring may help. Ask locals for their advice on dealing with unwanted attention.
- Be very careful in the hospital anytime sharps are being used! There is not only a high prevalence of HIV-positive patients, but good practices to minimize exposures are not always followed. If you are exposed, contact someone in the US immediately. When in doubt, take your first dose of PEP until you can sort out what to do next. Further details regarding PEP are provided at the end of this manual.
- Avoid running or walking through grass trails as there are lots of cobras and mambas in rural Uganda. Stick to the main roads unless you are walking slowly and making a lot of noise.
- Do not attempt to take photos of bridges, airports, or government buildings. Be respectful towards soldiers and police. If confronted by them, remain calm and cooperative.
- Homosexuality is illegal in Uganda, and there is a bill being debated to make it punishable with the death penalty. Public displays of affection between members of the same sex may lead to violence.
- According to the US State Department, "potential for terrorist activity from extremist organizations such as al-Shabaab remains high, and U.S. citizens are advised to avoid high-density public gatherings. The July 11, 2010 bombings of the rugby club and an Ethiopian restaurant in Kampala resulted in the deaths of 76 people, including one U.S. citizen, with six other U.S. citizens among the injured. More recently, terrorists in Nairobi attacked a bus bound for Kampala on December 20, 2010. U.S. citizens residing in or planning to visit Uganda should also be aware of threats to their safety posed by insurgent groups operating in the Democratic Republic of the Congo (DRC) and South Sudan, and the potential of cross border attacks carried out by these armed groups. In addition, U.S. citizens traveling to the area commonly known as Karamoja in northeastern Uganda should also be aware of ongoing conflict and armed banditry in this region."
- In April of 2011, protests in Kampala, Gulu, and other cities led by the opposition party led to several people being shot, and students at Makerere University involved in the protests led to teargas being used on campus.
- Road traffic accidents are quite common in Uganda, and can be deadly. Avoid traveling at night, or with any driver who seems intoxicated or who you don't have confidence in.

COMMUNICATION

- **Language:** *Learn as much of the local language as possible!!* It is the key to building relationships, opening doors, and understanding the community.
- **Cell phone use:** There are several carriers, and rates, reliability, and coverage seem to be constantly changing. Currently, Airtel and Orange are relatively cheap and fairly reliable. MTN is another popular provider. Make sure your cell phone is "unlocked" to allow other SIM cards, or plan on getting a phone locally (which you can do fairly cheaply). Sometimes, the GHRC has phones you can borrow. Note, that to call the US, add "+1" before the area code and number. It is recommended that if you are in Kampala with another student, that you get the same carrier, as this is cheaper and lead to fewer glitches and lost messages.
- **Calling from the U.S.:** Have family and friends get international calling cards, or call you using VOIP providers such as Skype.
- **Time difference:** Seattle is 11 hours behind Kampala (10 during daylight savings time).
- **Internet:** There is a high-speed fiber-optic broadband cable now in Uganda, so internet is becoming faster and more reliable, although in rural areas it can still be painfully slow. Most areas have some degree of Internet access. It is relatively easy to purchase a USB dongle from a cellphone provider that will allow you to use your laptop to access the Internet anywhere they have cell phone coverage. Rates vary. You will need to have your real passport with you to register for the dongle.

HOUSING

Susan Nassaka will assist you in setting up housing in your rural site. We'd appreciate any feedback you have for future students. Hot water is rare in a lot of places, so ask ahead of time if this is important to you. Electricity tends to be intermittent, so be sure you have candles/flashlights.

Below is some information about options in Kampala:

Makerere Guest House

- convenient location on campus, near the gate and taxis to Kampala, etc., about 20-30 min walk to Mulago
  clean, free wifi, but also the most expensive place on campus, "with a bit of a country club/expat feel."
- a bit pricey, has more of a dorm feel. Has had a few problems with water and electricity last year; no washer

Guest House Annex

- dorm-like accommodations, with 2-5 beds per room
- $25 - $30 per bed

NUFU House

- located on Makerere University campus, within walking distance of the main gate and Mulago.
- one of the best kept houses on campus-very clean, breakfast included, great
- house manager, free wifi, working television, hot water(!)
- security gate
- single room $26
- double room $32
- phone 256 41 541 280
- Contact: Margaret, 256 71 299 5428

Human Rights and Peace Center apartments

- 2 bedroom house with 2.5 baths, full kitchen, lg. living room, desktop computer with printer, washer. Very safe. Cleaning included 3x per week.
- On Makerere University campus, about 25 minute walk to Mulago
- $50/day and can split with others if that option is available.
- Ethernet internet; faster at night
- contact: Grace, 256 782 727 712 or 256 41 532 954
- website: www.huripec.ac.ug

Social Research Flats

- on Makerere campus
- single room $30
- contact: George Owori , 256 782 650 881

Private Home

- Ms. Tibaleka Betty (owner)
- very spacious, clean, luxurious home
- $20 per single rm, $20 per person for a self-contained double rm
- Ask Susan for contact details

Bukoto Brown flats

- 14,000 -20,000 UGX per night per person
- Cold water only, no fans available
- Living room with couch, dining table, balcony, kitchen
- Mosquito nets available.

Kampala Inn

- A small, decent "bed and breakfast" on Kira road across from the Gapco station (one taxibus stop from Makerere).
- Generally quiet and safe, hot water, mosquito nets, and a shared lounge/dining room.
- Can likely negotiate rates for an extended stay.
- Security gate and "guard"

Kampala Kolping House

- A large, immaculately clean hotel on Bombu Rd, popular with missionary groups.
- On the more expensive side.
- Security gate and guard

Edge House:

- Not fancy, but less expensive than many other options
- Had some plumbing issues last year.
- Security gate
- Contact: Lucy 011256704691423

College Inn:

- Relatively close (Wandegeya)
- Very noisy part of town, right on the street, questionable security
- Has had plumbing and other issues recently

Akamwesi Hostel:

- In Wandegeya, not a hostel but large apartment complex
- Very secure with security guards and ID-required entry
- Nice facilities
- $100/month for private room
- Tenants are other international students and wealthy Ugandan students

HAM Suites:

- Across the street from Makerere; very nice apartments
- Most international students live here
- $15/night for a 2 bedroom apartment
- No kitchen but there is a fridge and a microwave
- Wi-Fi, hot water, access to food, movies, gym, hill-top view all in same building.

FOOD

Ugandan food tends to be starchy. Local food is relatively inexpensive, and in the markets you can find a variety of fruits, vegetables, and hot food stalls. Tilapia is a popular and widely available fish (obtained from Lake Victoria). Eggs, rice, beans, and meat (beef, chicken, goat) are common. There are a number of good, but expensive (comparable to U.S. prices), India, Chinese, and Thai restaurants in Kampala. Food diversity generally decreases as you leave the capital. A couple of local classics:

- **Matooke** is the local staple, made of steamed and mashed plantains.
- **Rolex** is a hot chapatti with a veggie omelet rolled inside.

ENTERTAINMENT

- Acacia Mall is close to Mulago and has lots of stores and food.
- Garden City mall in Kampala includes a movie theatre and a good bookstore, (Aristoc).
- Recommended excursions:
  - Sipi Falls
  - Mabira Forest
  - Jinja/Source of the Nile *
  - Mpanga Forest
  - Lake Bunyonyi
  - Murchison Falls *
  - Lake Mburo

***Highest recommendations**

GENERAL TIPS FROM FORMER STUDENTS

- Things are more expensive than you think, so budget well.
- Remember that all things are negotiable. It's a good idea to know what price is fair before you enter into bargaining.
- If you want to buy gifts go to the fair trade craft shop on Kampala road. They have a lot of good stuff. It is a bit more expensive but the money goes to a good cause.
- Bring nice clothes and shoes. Appearance means a lot here, so dress nicely.
- Take your anti-malarials every day or week because there really is a lot of falciparum here.
- If you are female and single, making up an imaginary husband or boyfriend who is waiting for you back in the States may help to ward off unwanted sexual attention.
- Be prepared to see a different take on "patient care." Patients may be yelled at, slapped, or ignored. Be prepared to deal with the emotions that come up in these situations. Know your place and make your own ethical and personal decisions.
- No one "rushes" here, so be prepared to chill out a bit.
- Be proactive in what you want to see and learn.
- Men and women are not treated as equals in Uganda. Women are generally seen as inferior and less intelligent and are often paid less than men for the same work.
- Be flexible, as things often pan out differently than expected.
- Don't get burned out. If you find yourself getting really frustrated about how things run at the hospital (i.e. a patient dies because of an avoidable mistake, or a nurse hits a woman in labor, etc), try to journal/digest your feelings or find someone to talk to. There is too much pain and suffering to try to deal with it all by yourself.
- Mutatus (small taxi buses) fit ~15 people, have dedicated routes and are generally safe. Ask the conductor closest to the door for directions. Make sure to have them repeat back to you the location you want. A "Yes" in Uganda doesn't necessarily mean "Yes" as it does in the U.S. and is sometimes simply an acknowledgment that you were heard, not necessarily that you were understood.

CULTURAL ADJUSTMENT

- Look for a cultural broker, someone who has and understanding of both U.S. culture and the local culture. An expatriate who has spent many years living in the host country, or a local who has lived in the U.S. can be invaluable in helping you negotiate and understand your host country.

- Learn as much as you can about your host country's history, values, language, culture and norms.

- Resist the urge to assume that people are just "doing things wrong" in your host country, and that you know better. Try to understand the reasons why things might be handled differently.

- Remember that, in general, developing countries tend to be more formal than the U.S. and communication is more likely to be indirect. Value is placed on respecting social hierarchies, "saving face" and avoiding embarrassment.

- Be aware that needing to re-learn even simple routines in a foreign culture is stressful. Give yourself time to adapt, and don't be afraid to make mistakes.

In her book, *Foreign to Familiar*, (2000, McDougal Publishing), Sarah Lanier discusses the differences between "Hot-Climate" and "Cold-Climate" cultures. Although this distinction is a vast oversimplification, they do represent spectrums of cultural norms that can provide a useful framework for understanding cultural differences. The chart below is loosely adapted from her work.

	"Cold-Climate" Cultures	**"Hot-Climate" Cultures**
Social Interactions	Efficiency is valued. It is acceptable to be businesslike with people you don't know, and personal questions are to be avoided.	Relationships are valued more than efficiency. It is important to acknowledge people and not rush interactions. Getting to the point too quickly is rude, and personal questions are welcome.
Emotions	Logic, restraint and objectivity are valued, and displays of emotion are rare.	People are emotionally demonstrative. Subjective feelings and intuition are given credibility.
Communication	Accurate, truthful information is valued. Communication is direct, words are to be taken at face value, and people say what they mean. "No" means "no," and things are not meant to be taken personally.	Maintaining harmony is important, and disagreeing, complaining or causing offense or embarrassment is to be avoided. Indirect methods of communication are frequently used. It is impolite to directly say "no" or not give the answer a person expects to hear.
Individuality	Individuality, autonomy, personal initiative and self-reliance are valued. Individual likes and dislikes are important. People are expected to speak their opinions, and look after their own needs. People see themselves as "free to do as they please."	Community cohesion and group identity are valued over individuality. ("I belong, therefore I am.") The needs of the community are more important than personal desires. A person's opinions should reflect those of the group. One's actions should reflect well on the group.
Hierarchy	Society is fluid. People generally see themselves as equals, and authority is earned and can be openly questioned. What you know is more important than who you know, and the value of an idea depends on its utility, not its source. "Low-power distance"	Society is hierarchical. Class and social distinctions are maintained, acknowledged and deferred to. Authority is not to be questioned, and the value of one's opinion increases with social rank. "High-power distance"
Formality	Interactions are casual. First names are used. Clothing choices reflect personal tastes and comfort. "Low context"	Interactions are formal, and it is important to follow protocols and demonstrate respect for elders and superiors. People are referred to by their titles. Greetings carry great importance, and clothing should reflect one's place in society. "High context"
Privacy	People have a "right to privacy," their own personal space and time to themselves.	People have a right to be included. Privacy is considered rude. Plans and conversations should include all.
Property	Personal property is considered sacred. People pay their own way, are responsible for their own things, and there is no obligation or expectation to share.	Property is communal and belongs to the group. This is particularly true for food, which is expected to be shared by all.

Planning Planning Continued	Planning is expected, and schedules are adhered to except in extreme circumstances.	Spontaneity is preferred. Schedules are always subject to change. Flexibility and patience are valued. It is acceptable to show up unannounced or not follow through on plans.
Hospitality	Visitors are expected to make arrangements for their own food, housing and transportation, and payments are negotiated ahead of time. When people are invited out, it is expected that they will all pay their own way. Social events usually take place at public establishments.	Hospitality is important. Visitors need to be taken care of, and it is not appropriate to ask them to pay, although it is expected that they will leave gifts in exchange. When people are invited out, it is expected that the person who gave the invitation will pay. Social events usually take place in the home.
Gender	Gender differences are minimized. Women are judged on the same criteria as men. Traditional roles are less respected.	Gender differences are important, and women are expected to be submissive to men. Traditional roles are respected.
Time	Time is a linear phenomenon, measured by clocks. Punctuality and planning are valued. It is important to respect someone's time: Time is money. "Monochromic time"	Time is relative, and is measured by events. It is important to be living in the moment and to deal with things as they come up. Attending to people's needs is valued, regardless of how long it takes. "Polychromic time"

Culture Shock

"Culture shock" is real, and it is important to be prepared for it and to recognize when it is occurring. What people generally mean by culture shock is the stress that occurs from being away from familiar surroundings and continually having to struggle to understand what is going on around you. What begins as discomfort and confusion can subtly progress to frustration, anxiety, irritability, loneliness and withdrawal. More often than not, anger is the result, and it is not uncommon for this to lead to unprofessional behavior and lashing out at the local community. When you find your frustration mounting, be sure to take a step back and find productive and healthy ways to manage your stress. Remember, you are ultimately just a guest in their country. Above all, try and keep a sense of humor.

Be aware that you will likely have some reverse culture shock upon returning to the U.S.

Guidelines for the Management of Needlestick Injury and Body Fluid Exposure

Background:

When working in clinical environments, there exists the possibility for exposure to bloodborne pathogens, particularly in environments where universal precautions and sharps disposal practices may not be followed with the same rigor as in the US. Exposure to blood and other bodily fluids can transmit Hepatitis B, hepatitis C, and HIV, as well as other illnesses such as viral hemorrhagic fevers, including dengue. Transmission of malaria can also occur through needlestick, as can transmission of other parasitic diseases such as trypanosomiasis and visceral leischmaniasis.

Pre-departure advice:

PREVENTION: Obviously, the most important aspect of blood and body fluid exposure is prevention. Students should use gloves and other personal protective equipment if there exists the possibility of contact with a patient's blood. All students should bring with them a box of non-sterile gloves. You are also encouraged to bring some form of eye protection and face masks. If in a malarious area, tablets for malaria prophylaxis and attention to insect precautions can prevent this potentially fatal disease.

VACCINATION: Hepatitis B is highly transmissible through needlestick injuries (about 1 in 3 people exposed will seroconvert) - all students should have completed their hepatitis B vaccination series before leaving for their GHCE. You should be sure you are protected against measles, mumps, rubella, hepatitis A, tetanus, diphtheria, typhoid, and varicella, and polio. Depending on location, yellow fever and/or meningitis may be appropriate as well. Although there are as yet no efficacious vaccines for hepatitis C or HIV, in case of a needlestick it is helpful to know your baseline serostatus for these infections.

POST-EXPOSURE PROPHYLAXIS: You are required to purchase and bring with you two different HIV prophylactic medications. You should bring a 3-5 day supply of medication, which will allow you to get PEP started, then we can work with you to determine whether you should come home to complete treatment versus getting additional treatment and continuing in-country.

In the event of a needle-stick injury with a contaminated needle, or other significant exposure, you would generally begin taking treatment right away, while arranging for the patient to have HIV testing. If the patient is HIV positive, you should then need to complete a full 30 days of medications.

Specific prophylactic regimens should be discussed during your Travel Clinic visit, and you should ask for a prescription during your visit for a 1-5 day supply.

WHAT TO DO IN THE EVENT OF A BODY FLUID EXPOSURE:

1) **Don't Panic**.

The vast majority of exposures result in no harm. For example, the seroconversion rate of an untreated needlestick injury from an HIV positive patient is less than 0.3%, and from a mucosal exposure less than 0.09%. With prompt initiation of antiretroviral medications, this risk is further reduced 85% or more.

2) **Wash the exposed area**.

Remove all soiled clothing. Wash skin and wounds with soap and water. Irrigate wounds copiously with water. Flush eyes or mucous membranes with water or sterile saline.

3) **Let someone know**.

Inform your clinical supervisor that you had an exposure. Contact a medical provider with experience in post-exposure prophylaxis (CDC Post-Exposure Prophylaxis Hotline, Harborview Madison Clinic, Dr. McClelland, etc.)

4) **Decide if you need to start medications**.

This will depend on the severity of the exposure and the HIV status of the patient. If the patient is HIV positive or of unknown status in a high-prevalence area, *antiretroviral medications should be started as soon as possible* in the event of a needlestick injury, or if visibly bloody fluid is splashed into your eyes or mouth. (See the attached CDC algorithm for specifics). Do not wait for the source patient's blood testing to come back before starting meds. If the patient has suspicion for *P. falciparium*, consider taking a presumptive treatment of malaria if you are not on malaria prophylaxis.

5) **Arrange for testing**.

If possible, arrange for HIV testing of the source patient and a malaria smear (if in an endemic area). If serologies for hepatitis B surface antigen and hepatitis C antibody are readily available, send these too. If you do not know your own HIV, hepatitis C, or pregnancy status, these should be checked. It is helpful to get a CBC, chemistry panel, and hepatic panel if you are going to be starting medications. This will allow your physician to have baseline labs in the event you develop side effects from your antiretroviral medications.

6) **Decide if you need to come home**.

If the source patient tests **negative** for HIV, and you think it unlikely that the patient contracted HIV in the past few months, you can *stop treatment*. If the patient is HIV **positive**, cannot be tested, or is felt to be at high risk of HIV despite a negative test result, continue treatment. *It is generally recommended to arrange for medical evacuation back home* for proper evaluation and monitoring while on prophylaxis. However, many countries now have doctors and facilities that are expert in treating patients with antiretroviral medications. The decision to stay at your post or return home is a serious one that should be discussed with a qualified medical provider. The GHRC is happy to work with you on ways to deal with academic credit and financial aid issues in the event an evacuation is needed.

7) **Get support.**

Having a body fluid exposure is often a deeply unsettling experience. It is recommended that you talk it over with someone to help put things in perspective. Most people feel extremely frightened and vulnerable right after an exposure. The CDC's "PEPline" is an excellent resource. This is a national hotline that provides around-the-clock expert guidance in managing healthcare worker exposures to HIV and hepatitis B and C. Callers receive immediate post-exposure prophylaxis recommendations and counseling. The phone number is +1-888-448-4911. You may also call Dr. McClelland at +1-206-473-0392.

Preferred HIV PEP Regimen:

- Raltegravir (Isentress; RAL) 400 mg PO twice daily (NOT available in Uganda except at the Infectious Disease Institute at Mulago – it is VERY important that you bring your 3-5 day supply of HIV PEP meds.

Plus:

- Truvada, 1 PO once daily
- (Tenofovir DF [Viread; TDF] 300 mg emtricitabine [Emtriva; FTC] 200 mg)

Also see Kuhar et. al. JSTOR 2013; 37:875-93. This paper provides detailed information on the current US CDC guidelines for post-exposure prophylaxis. (attached)

MAPS:

Uganda


UGANDA
SUDAN
KENYA
DEMOCRATIC REPUBLIC OF THE CONGO
RWANDA
UNITED REPUBLIC OF TANZANIA
BURUNDI
LAKE VICTORIA
Lake Albert
Lake Edward
ARUA
MOYO
ADJUMANI
NEBBI
GULU
KITGUM
KOTIDO
APAC
LIRA
MOROTO
KATAKWI
MASINDI
SOROTI
KUMI
KAPCHORWA
PALLISA
MBALE
KAMULI
BUNDIBUGYO
KIBALE
KIBOGA
NAKASONGOLA
LUWERO
MUKONO
KAMPALA
IGANGA
TORORO
JINJA
BUGIRI
BUSIA
MUBENDE
KABAROLE
KASESE
MPIGI
SEMBABULE
MASAKA
BUSHENYI
MBARARA
RAKAI
KALANGALA
RUKUNGIRI
NTUNGAMO
KABALE
Kampala
Entebbe
Fort Portal
Hoima
Masindi
Bunia
Gulu
Lira
Arua
Kitgum
Lopodi
Nimule
Mbale
Tororo
Jinja
Iganga
Bombo
Mubende
Masaka
Mbarara
Kasese
Ibanda
Kabale
Kyaka
Kigali
Bumbire
Ukara
Ukerewe
Sese Is.
Kome
Lolui
Sigulu
Mfangano
Kapchorwa
Kitale
Eldoret
Bungoma
Namalu
Lokitanyala
Moroto
Kotido
Katakwi
Soroti
Kumi
Pallisa
Mbale
Kamuli
Iganga
Tororo
Jinja
Bugiri
Busia
Kampala
Mpigi
Masaka
Bushenyi
Mbarara
Rakai
Kalangala
Rukungiri
Ntungamo
Kabale
Kasese
Fort Portal
Hoima
Masindi
Bunia
Gulu
Lira
Arua
Kitgum
Lopodi
Nimule
National capital
Town, village
International boundary
District boundary
Road
Railroad
Airport
0 25 50 75 100 km
0 25 50 75 mi
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Kampala


Mulago Hospital
Water Tank
Mulago Hill Road 1
Mulago Hill Road 2
Makerere University Water Tank
Makerere University School of Public Health
Kikumi-Kikumi Restaurants
Vet Animal House 1
Uganda Wildlife Authority
Straight Talk Foundation
Opportunity Uganda
Kasubi View
Makerere University Graduation Grounds
Wandegeya
Katanga
Car Washing Bay
Ministry Of Health
Ministry of Health
Kitante
Golf Course Apartments
Lumbox Square
Marystuart Road Staff Blocks
Bermuda Triangle
Tennis Court Rd
Emin Pasha Hotel & Bar
EADD
Tullow Oil Uganda
Protea
Central Kampala
Makerere Hill Rd
Nakulabye
Full Gospel Church Extension
Makerere University Hospital
St. Catherine's Clinic
Mama Ashanti
Embassy of Ireland
Metropole
LDC Rd
Nalweyiso house
Kagugube
Uganda National Library
Makerere Kivulu
The Indian Association Uganda
Nakasero
Agha Khan University
Kiseka Market
Kisozi Complex
Watoto Bldg
Exposure Africa
Hotel Ruch Kampala
Imperial Royale
UETCL
Garden City
Kampala Serena
Nsalo Rd
Kampala Rd
Grand Imperial Hotel
Kampala Sheraton
Nile Ave
Mutunya Rd
Fort Lugard
Fort Rd
Old Kampala
Bakuli
Namirembe Rd
Luwum St
Kampala
Parliament Rd
Kampala Road
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US PUBLIC HEALTH SERVICE GUIDELINE

Updated US Public Health Service Guidelines for the Management of Occupational Exposures to Human Immunodeficiency Virus and Recommendations for Postexposure Prophylaxis

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for the US Public Health Service Working Group

This report updates US Public Health Service recommendations for the management of healthcare personnel (HCP) who experience occupational exposure to blood and/or other body fluids that might contain human immunodeficiency virus (HIV). Although the principles of exposure management remain unchanged, recommended HIV postexposure prophylaxis (PEP) regimens and the duration of HIV follow-up testing for exposed personnel have been updated. This report emphasizes the importance of primary prevention strategies, the prompt reporting and management of occupational exposures, adherence to recommended HIV PEP regimens when indicated for an exposure, expert consultation in management of exposures, follow-up of exposed HCP to improve adherence to PEP, and careful monitoring for adverse events related to treatment, as well as for virologic, immunologic, and serologic signs of infection. To ensure timely postexposure management and administration of HIV PEP, clinicians should consider occupational exposures as urgent medical concerns, and institutions should take steps to ensure that staff are aware of both the importance of and the institutional mechanisms available for reporting and seeking care for such exposures. The following is a summary of recommendations: (1) PEP is recommended when occupational exposures to HIV occur; (2) the HIV status of the exposure source patient should be determined, if possible, to guide need for HIV PEP; (3) PEP medication regimens should be started as soon as possible after occupational exposure to HIV, and they should be continued for a 4-week duration; (4) new recommendation—PEP medication regimens should contain 3 (or more) antiretroviral drugs (listed in Appendix A) for all occupational exposures to HIV; (5) expert consultation is recommended for any occupational exposures to HIV and at a minimum for situations described in Box 1; (6) close follow-up for exposed personnel (Box 2) should be provided that includes counseling, baseline and follow-up HIV testing, and monitoring for drug toxicity; follow-up appointments should begin within 72 hours of an HIV exposure; and (7) new recommendation—if a newer fourth-generation combination HIV p24 antigen–HIV antibody test is utilized for follow-up HIV testing of exposed HCP, HIV testing may be concluded 4 months after exposure (Box 2); if a newer testing platform is not available, follow-up HIV testing is typically concluded 6 months after an HIV exposure.

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Preventing exposures to blood and body fluids (ie, primary prevention) is the most important strategy for preventing occupationally acquired human immunodeficiency virus (HIV) infection. Both individual healthcare providers and the institutions that employ them should work to ensure adherence to the principles of Standard Precautions,[1] including ensuring access to and consistent use of appropriate work practices, work practice controls, and personal protective equipment. For instances in which an occupational exposure has occurred, appropriate postexposure management is an important element of workplace safety. This document provides updated recommendations concerning the management of occupational exposures to HIV.

The use of antiretrovirals as postexposure prophylaxis (PEP) for occupational exposures to HIV was first considered in guidelines issued by the Centers for Disease Control and Prevention (CDC) in 1990.[2] In 1996, the first US Public Health Service (PHS) recommendations advocating the use of PEP after occupational exposure to HIV were published; these recommendations have been updated 3 times.[3-6] Since

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publication of the most recent guidelines in 2005, several new antiretroviral agents have been approved by the Food and Drug Administration (FDA), and additional information has become available regarding both the use and the safety of agents previously recommended for administration for HIV PEP.

As a direct result of 7 years' experience with the 2005 guidelines, several challenges in the interpretation and implementation of those guidelines have been identified. These challenges include difficulties in determining levels of risk of HIV transmission for individual exposure incidents, problems determining the appropriate use of 2 versus 3 (or more) drugs in PEP regimens, the high frequency of side effects and toxicities associated with administration of previously recommended drugs, and the initial management of healthcare personnel (HCP) with exposures to a source patient whose HIV infection status was unknown. The PHS working group has attempted to address both the new information that has been developed and the challenges associated with the practical implementation of the 2005 guidelines in this update.

This report encourages using HIV PEP regimens that are optimally tolerated, eliminates the recommendation to assess the level of risk associated with individual exposures to determine the number of drugs recommended for PEP, modifies and expands the list of antiretroviral medications that can be considered for use as PEP, and offers an option for concluding HIV follow-up testing of exposed personnel earlier than 6 months after exposure. This report also continues to emphasize the following: (1) primary prevention of occupational exposures; (2) prompt management of occupational exposures and, if indicated, initiation of PEP as soon as possible after exposure; (3) selection of PEP regimens that have the fewest side effects and that are best tolerated by prophylaxis recipients; (4) anticipating and preemptively treating side effects commonly associated with taking antiretroviral drugs; (5) attention to potential interactions involving both drugs that could be included in HIV PEP regimens and other medications that PEP recipients might be taking; (6) consultation with experts on postexposure management strategies (especially determining whether an exposure has actually occurred and selecting HIV PEP regimens, particularly when the source patient is antiretroviral treatment experienced); (7) HIV testing of source patients (without delaying PEP initiation in the exposed provider) using methods that produce rapid results; and (8) counseling and follow-up of exposed HCP.

Recommendations concerning the management of occupational exposures to hepatitis B virus and/or hepatitis C virus (HCV) have been published previously[5,7] and are not included in this report. Recommendations for nonoccupational (eg, sexual, pediatric, and perinatal) HIV exposures also have been published previously.[8-10]

METHODS

In 2011, the CDC reconvened the interagency PHS working group to plan and prepare an update to the 2005 *Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HIV and Recommendations for Postexposure Prophylaxis*.[6] The PHS working group was comprised of members from the CDC, the FDA, the Health Resources and Services Administration, and the National Institutes of Health. Names, credentials, and affiliations of the PHS working group members are listed as the byline of this guideline. The working group met twice a month to monthly to create a plan for the update as well as draft the guideline.

A systematic review of new literature that may have become available since 2005 was not conducted; however, an initial informal literature search did not reveal human randomized trials demonstrating superiority of 2-drug antiretroviral medication regimens versus those with 3 (or more) drugs as PEP or an optimal PEP regimen for occupational exposures to HIV. Because of the low risk of transmission associated with occupational exposures (ie, approximately 0.3% per exposure when all parenteral exposures are considered together),[11] neither the conduct of a randomized trial assessing efficacy nor the conduct of trials assessing the comparative efficacy of 2- versus 3-drug regimens for PEP is practical. In light of the absence of such randomized trials, the CDC convened a meeting of the interagency PHS working group and an expert panel of consultants in July 2011 to discuss the use of HIV PEP and develop the recommendations for this update. The expert panel consisted of professionals in academic medicine considered to be experts in the treatment of HIV-infected individuals, the use of antiretroviral medications, and PEP. Names, credentials, and affiliations of the expert panel of consultants are listed in "Expert Panel Consultants" at the end of this guideline.

Prior to the July 2011 meeting, the meeting participants were provided an electronic copy of the 2005 guidelines and asked to review them and consider the following topics for discussion at the upcoming meeting: (1) the challenges associated with the implementation of the 2005 guidelines, (2) the role of ongoing risk stratification in determining the use of 2-drug PEP regimens versus those with 3 or more drugs, (3) updated drug choices for PEP, (4) the safety and tolerability of antiretroviral agents for the general population and for pregnant or lactating HCP, and (5) any other topics in the 2005 guideline that needed to be updated.

At the July 2011 meeting, a CDC representative presented a review of the 2005 guideline recommendations, surveillance data on occupational exposures from the National Surveillance System for Healthcare Workers,[12] and data from the National Clinicians' Post-Exposure Prophylaxis Hotline (PEPline) on the number of occupational exposures to HIV managed annually, PEP regimens recommended, and challenges experienced with implementation of the 2005 guidelines. An FDA representative presented a review of the new medications that have become available since 2005 for the treatment of HIV-infected individuals, information about medication tolerability and toxicity, and the use of these medications during pregnancy. These presentations were followed by a discussion of the topics listed above.

Among the challenges discussed regarding implementation of the 2005 guidelines were the difficulties in determining level of risk of HIV transmission for individual exposure incidents, which in turn determined the number of drugs recommended for HIV PEP. The consensus of the meeting participants was to no longer recommend exposure risk stratification (discussed in detail in "Recommendations for the Selection of Drugs for HIV PEP" below). To update the drug choices for PEP, all drugs available for the treatment of HIV-infected individuals were discussed with regard to tolerability, side effects, toxicity, safety in pregnancy and lactation, pill burden, and frequency of dosing. A hierarchy of recommended drugs/regimens was developed at the meeting and utilized in creating the PEP regimen recommendations (Appendixes A and B) in these guidelines. Among other topics identified as needing an update were the acceptable HIV testing platforms available for source patient and follow-up testing of exposed HCP; the timing of such testing, depending on the platform used; and the potential utility of source patient drug-resistance information/testing in PEP regimens.

After the expert consultation, the expert panelists received draft copies of these guidelines as they were updated and provided insights, information, suggestions, and edits and participated in subsequent teleconferences with the PHS working group, to assist in developing these recommendations. Proposed recommendation updates were presented to the Healthcare Infection Control Practices Advisory Committee in November 2011[13] and June 2012[14] during public meetings. The PHS working group considered all available information, expert opinion, and feedback in finalizing the recommendations in this update.

DEFINITION OF HCP AND EXPOSURE

The definitions of HCP and occupational exposures are unchanged from those used in 2001 and 2005.[5,6] The term HCP refers to all paid and unpaid persons working in healthcare settings who have the potential for exposure to infectious materials, including body substances (eg, blood, tissue, and specific body fluids), contaminated medical supplies and equipment, and contaminated environmental surfaces. HCP might include but are not limited to emergency medical service personnel, dental personnel, laboratory personnel, autopsy personnel, nurses, nursing assistants, physicians, technicians, therapists, pharmacists, students and trainees, contractual staff not employed by the healthcare facility, and persons not directly involved in patient care but potentially exposed to blood and body fluids (eg, clerical, dietary, housekeeping, security, maintenance, and volunteer personnel). The same principles of exposure management could be applied to other workers with potential for occupational exposure to blood and body fluids in other settings.

An exposure that might place HCP at risk for HIV infection is defined as a percutaneous injury (eg, a needlestick or cut with a sharp object) or contact of mucous membrane or nonintact skin (eg, exposed skin that is chapped, abraded, or afflicted with dermatitis) with blood, tissue, or other body fluids that are potentially infectious. In addition to blood and visibly bloody body fluids, semen and vaginal secretions are also considered potentially infectious. Although semen and vaginal secretions have been implicated in the sexual transmission of HIV, they have not been implicated in occupational transmission from patients to HCP. The following fluids are also considered potentially infectious: cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, and amniotic fluid. The risk for transmission of HIV infection from these fluids is unknown; the potential risk to HCP from occupational exposures has not been assessed by epidemiologic studies in healthcare settings. Feces, nasal secretions, saliva, sputum, sweat, tears, urine, and vomitus are not considered potentially infectious unless they are visibly bloody.[11]

Any direct contact (ie, contact without barrier protection) to concentrated virus in a research laboratory or production facility requires clinical evaluation. For human bites, clinical evaluation must include the possibility that both the person bitten and the person who inflicted the bite were exposed to bloodborne pathogens. Transmission of HIV infection by this route has been reported rarely, but not after an occupational exposure.[15-20]

RISK FOR OCCUPATIONAL TRANSMISSION OF HIV

Factors associated with risk for occupational transmission of HIV have been described; risks vary with the type and severity of exposure.[4,5,11] In prospective studies of HCP, the average risk for HIV transmission after a percutaneous exposure to HIV-infected blood has been estimated to be approximately 0.3% (95% confidence interval [CI], 0.2%–0.5%)[11] and that after a mucous membrane exposure to be approximately 0.09% (95% CI, 0.006%–0.5%).[21] Although episodes of HIV transmission after nonintact skin exposure have been documented, the average risk for transmission by this route has not been precisely quantified but is estimated to be less than the risk for mucous membrane exposures. The risk for transmission after exposure to fluids or tissues other than HIV-infected blood also has not been quantified but is probably considerably lower than that for blood exposures.

Epidemiologic and laboratory studies suggest that multiple factors might affect the risk of HIV transmission after an occupational exposure.[22] In a retrospective case-control study of HCP who had percutaneous exposure to HIV, increased risk for HIV infection was associated with exposure to a larger quantity of blood from the source person as indicated by (1) a device (eg, a needle) visibly contaminated with the patient's blood, (2) a procedure that involved a needle being placed directly in a vein or artery, or (3) a deep injury. The risk also was increased for exposure to blood from source persons with terminal illness, likely reflecting the higher titer of HIV in blood late in the course of acquired immunodeficiency syndrome (AIDS). Taken together, these factors suggest a direct inoculum effect (ie, the larger the viral inoculum, the higher

the risk for infection). One laboratory study that demonstrated that more blood is transferred by deeper injuries and hollow-bore needles lends further credence to the observed variation in risk related to inoculum size.[23]

Exposure to a source patient with an undetectable serum viral load does not eliminate the possibility of HIV transmission or the need for PEP and follow-up testing. While the risk of transmission from an occupational exposure to a source patient with an undetectable serum viral load is thought to be very low, PEP should still be offered. Plasma viral load (eg, HIV RNA) reflects only the level of cell-free virus in the peripheral blood; persistence of HIV in latently infected cells, despite patient treatment with antiretroviral drugs, has been demonstrated,[24,25] and such cells might transmit infection even in the absence of viremia. HIV transmission from exposure to a source person who had an undetectable viral load has been described in cases of sexual and mother-to-child transmissions.[26,27]

ANTIRETROVIRAL AGENTS FOR PEP

Antiretroviral agents from 6 classes of drugs are currently available to treat HIV infection.[28] These include the nucleoside and nucleotide reverse-transcriptase inhibitors (NRTIs), nonnucleoside reverse-transcriptase inhibitors (NNRTIs), protease inhibitors (PIs), a fusion inhibitor (FI), an integrase strand transfer inhibitor (INSTI), and a chemokine (C-C motif) receptor 5 (CCR5) antagonist. Only antiretroviral agents approved by the FDA for treatment of HIV infection are included in these guidelines, although none of these agents has an FDA-approved indication for administration as PEP. The rationale for offering antiretroviral medications as HIV PEP is based on our current understanding of the pathogenesis of HIV infection and the plausibility of pharmacologic intervention in this process, studies of the efficacy of antiretroviral chemoprophylaxis in animal models,[29,30] and epidemiologic data from HIV-exposed HCP.[22,31] The recommendations in this report provide guidance for PEP regimens comprised of 3 (or, when appropriate, more) antiretrovirals, consonant with currently recommended treatment guidelines for HIV-infected individuals.[28]

TOXICITY AND DRUG INTERACTIONS OF ANTIRETROVIRAL AGENTS

Persons receiving PEP should complete a full 4-week regimen.[5] However, previous results show that a substantial proportion of HCP taking an earlier generation of antiretroviral agents as PEP frequently reported side effects,[12,32-40] and many were unable to complete a full 4-week course of HIV PEP due to these effects and toxicities.[32-37] Because all antiretroviral agents have been associated with side effects (Appendix B),[28] the toxicity profile of these agents, including the frequency, severity, duration, and reversibility of side effects, is a critical consideration in selection of an HIV PEP regimen. The majority of data concerning adverse events has been reported primarily for persons with established HIV infection receiving prolonged antiretroviral therapy and therefore might not reflect the experience of uninfected persons who take PEP. In fact, anecdotal evidence from clinicians knowledgeable about HIV treatment indicates that antiretroviral agents are tolerated more poorly by HCP taking HIV PEP than by HIV-infected patients on antiretroviral medications. As side effects have been cited as a major reason for not completing PEP regimens as prescribed, the selection of regimens should be heavily influenced toward those that are best tolerated by HCP receiving PEP. Potential side effects of antiretroviral agents should be discussed with the PEP recipient, and, when anticipated, preemptive prescribing of agents for ameliorating side effects (eg, antiemetics and antispasmodics) may improve PEP regimen adherence.

In addition, the majority of approved antiretroviral agents might have potentially serious drug interactions when used with certain other drugs, thereby requiring careful evaluation of concomitant medications, including over-the-counter medications and supplements (eg, herbals), used by an exposed person before prescribing PEP and close monitoring for toxicity of anyone receiving these drugs.[28] PIs and NNRTIs have the greatest potential for interactions with other drugs. Information regarding potential drug interactions has been published, and up-to-date information can be found in the *Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents*.[28] Additional information is included in manufacturers' package inserts. Consultation with a pharmacist or physician who is an expert in HIV PEP and antiretroviral medication drug interactions is strongly encouraged.

SELECTION OF HIV PEP REGIMENS

Guidelines for treating HIV infection, a condition typically involving a high total body burden of HIV, recommend the use of 3 or more drugs. Although the applicability of these recommendations to PEP is unknown, newer antiretroviral agents are better tolerated and have preferable toxicity profiles than agents previously used for PEP.[28] As less toxic and better-tolerated medications for the treatment of HIV infection are now available, minimizing the risk of PEP noncompletion, and the optimal number of medications needed for HIV PEP remains unknown, the PHS working group recommends prescribing 3 (or more) tolerable drugs as PEP for all occupational exposures to HIV. Medications included in an HIV PEP regimen should be selected to optimize side effect and toxicity profiles and a convenient dosing schedule to encourage HCP completion of the PEP regimen.

RESISTANCE TO ANTIRETROVIRAL AGENTS

Known or suspected resistance of the source virus to antiretroviral agents, particularly to 1 or more of those that might be included in a PEP regimen, raises concerns about reduced PEP efficacy.[41] Drug resistance to all available antiretroviral agents has been reported, and cross-resistance within drug

classes occurs frequently.[42] Occupational transmission of drug-resistant HIV strains, despite PEP with combination drug regimens, has been reported.[43-45] If a source patient is known to harbor drug-resistant HIV, expert consultation is recommended for selection of an optimal PEP regimen. However, awaiting expert consultation should not delay the initiation of HIV PEP. In instances of an occupational exposure to drug-resistant HIV, administration of antiretroviral agents to which the source patient's virus is unlikely to be resistant is recommended for PEP.

Information on whether a source patient harbors drug-resistant HIV may be unclear or unavailable at the time of an occupational exposure. Resistance should be suspected in a source patient who experiences clinical progression of disease, a persistently increasing viral load, or a decline in $CD4^+$ T cell count despite therapy and in instances in which a virologic response to therapy fails to occur. However, resistance testing of the source virus at the time of an exposure is impractical because the results will not be available in time to influence the choice of the initial PEP regimen. If source patient HIV drug resistance is suspected in the management of an occupational exposure to HIV, consultation with an expert in HIV management is recommended so that antiretroviral agents to which the source patient's virus is unlikely to be resistant may be identified and prescribed. However, awaiting expert consultation should, again, not delay initiation of HIV PEP. If drug resistance information becomes available later in a course of PEP, this information should be discussed with the expert consultant for possible modification of the PEP regimen.

ANTIRETROVIRAL DRUGS DURING PREGNANCY AND LACTATION

The decision to offer HIV PEP to a pregnant or breast-feeding healthcare provider should be based on the same considerations that apply to any provider who sustains an occupational exposure to HIV. The risk of HIV transmission poses a threat not only to the mother but also to the fetus and infant, as the risk of mother-to-child HIV transmission is markedly increased during acute HIV infection during pregnancy and breast-feeding.[46] However, unique considerations are associated with the administration of antiretroviral agents to pregnant HCP, and the decision to use antiretroviral drugs during pregnancy should involve both counseling and discussion between the pregnant woman and her healthcare provider(s) regarding the potential risks and benefits of PEP for both the healthcare provider and her fetus.

The potential risks associated with antiretroviral drug exposure for pregnant women, fetuses, and infants depend on the duration of exposure as well as the number and type of drugs. Information about the use of newer antiretroviral agents, administered as PEP to HIV-uninfected pregnant women, is limited. For reasons including the complexities associated with appropriate counseling about the risks and benefits of PEP as well as the selection of antiretroviral drugs in pregnant women, expert consultation should be sought in all cases in which antiretroviral medications are prescribed to pregnant HCP for PEP.

In general, antiretroviral drug toxicity has not been shown to be increased during pregnancy. Conflicting data have been published concerning the risk of preterm delivery in pregnant women receiving antiretroviral drugs, particularly PIs;[47] in studies that have reported a positive association, the increase in risk was primarily observed in women who were receiving antiretroviral drug regimens at the time of conception and continued during pregnancy. Fatal[48] and nonfatal[49] lactic acidosis has been reported in pregnant women treated throughout gestation with a combination of stavudine and didanosine. Prescribing this drug combination for PEP is not recommended. Physiologic changes that occur during pregnancy may alter antiretroviral drug metabolism and, therefore, optimal drug dosing. The clinical significance of these changes is not clear, particularly when used for PEP in HIV-uninfected women. For details on antiretroviral drug choice and dosing in pregnancy, see *Recommendations for Use of Antiretroviral Drugs in Pregnant HIV-1-Infected Women for Maternal Health and Interventions to Reduce Perinatal HIV Transmission in the United States.*[10]

Prospective data from the Antiretroviral Pregnancy Registry do not demonstrate an increase in overall birth defects associated with first-trimester antiretroviral drug use. In this population, the birth defect prevalence is 2.9 per 100 live births, similar to the prevalence in the general population in the CDC's birth defect surveillance system (ie, 2.7 per 100 live births).[50] Central nervous system defects were observed in fetal primates that experienced in utero efavirenz (EFV) exposure and that had drug levels similar to those representing human therapeutic exposure; however, the relevance of in vitro laboratory and animal data to humans is unknown.[10] While human data are reassuring,[51] 1 case of meningomyelocele has been reported among the Antiretroviral Pregnancy Registry prospective cases, and data are insufficient to conclude that there is no increase in a rare outcome, such as neural tube defect, with first-trimester EFV exposure.[50] For these reasons, we recommend that pregnant women not use EFV during the first trimester.[10] If EFV-based PEP is used in women, a pregnancy test should be done to rule out early pregnancy, and nonpregnant women who are receiving EFV-based PEP should be counseled to avoid pregnancy until after PEP is completed. HCP who care for women who receive antiretroviral drugs during pregnancy are strongly advised to report instances of prenatal exposure to the Antiretroviral Pregnancy Registry (http://www.APRegistry.com/). The currently available literature contains only limited data describing the long-term effects (eg, neoplasia and mitochondrial toxicity) of in utero antiretroviral drug exposure. For this reason, long-term follow-up is recommended for all children who experience in utero exposures.[10,52,53]

Antiretroviral drug levels in breast milk vary among drugs,

with administration of some drugs resulting in high levels (eg, lamivudine), while other drugs, such as PIs and tenofovir (TDF), are associated with only limited penetration into milk.[54,55] Administration of antiretroviral triple-drug regimens to breast-feeding HIV-infected women has been shown to decrease the risk of transmission to their infants and infant toxicity has been minimal. Prolonged maternal antiretroviral drug use during breast-feeding may be associated with increased infant hematologic toxicity,[56,57] but limited drug exposure during 4 weeks of PEP may also limit the risk of drug toxicity to the breast-feeding infant. Breast-feeding should not be a contraindication to use of PEP when needed, given the high risk of mother-to-infant transmission with acute HIV infection during breast-feeding.[46] The lactating healthcare provider should be counseled regarding the high risk of HIV transmission through breast milk should acute HIV infection occur (in a study in Zimbabwe, the risk of breast milk HIV transmission during the 3 months after seroconversion was 77.6 infections per 100 child-years).[58] To completely eliminate any risk of HIV transmission to her infant, the provider may want to consider stopping breast-feeding. Ultimately, lactating women with occupational exposures to HIV who will take antiretroviral medications as PEP must be counseled to weigh the risks and benefits of continued breast-feeding both while taking PEP and while being monitored for HIV seroconversion.

MANAGEMENT OF OCCUPATIONAL EXPOSURE BY EMERGENCY PHYSICIANS

Many HCP exposures to HIV occur outside of occupational health clinic hours of operation and at sites at which occupational health services are unavailable, and initial exposure management is often overseen by emergency physicians or other providers who are not experts in the treatment of HIV infection or the use of antiretroviral medications. These providers may not be familiar with either the PHS guidelines for the management of occupational exposures to HIV or the available antiretroviral agents and their relative risks and benefits. Previous focus groups conducted among emergency department physicians who had managed occupational exposures to blood and body fluids in 2002[59] identified 3 challenges in occupational exposure management: evaluation of an unknown source patient or a source patient who refused testing, inexperience in managing occupational HIV exposures, and counseling of exposed workers in busy emergency departments. For these reasons, the PHS working group recommends that institutions develop clear protocols for the management of occupational exposures to HIV, indicating a formal expert consultation mechanism (eg, the in-house infectious diseases consultant or PEPline), appropriate initial source patient and exposed provider laboratory testing, procedures for counseling the exposed provider, identifying and having an initial HIV PEP regimen available, and a mechanism for outpatient HCP follow-up. In addition, these protocols must be distributed appropriately and must be readily available (eg, posted on signs in the emergency department, posted on a website, or disseminated to staff on pocket-sized cards) to emergency physicians and any other providers who may be called on to manage these exposure incidents.

RECOMMENDATIONS FOR THE MANAGEMENT OF HCP POTENTIALLY EXPOSED TO HIV

Exposure prevention remains the primary strategy for reducing occupational bloodborne pathogen infections. However, when occupational exposures do occur, PEP remains an important element of exposure management.

HIV PEP

The recommendations provided in this report apply to situations in which a healthcare provider has been exposed to a source person who has HIV infection or for whom there is reasonable suspicion of HIV infection. These recommendations reflect expert opinion and are based on limited data regarding safety, tolerability, efficacy, and toxicity of PEP. If PEP is offered and taken and the source is later determined to be HIV negative, PEP should be discontinued, and no further HIV follow-up testing is indicated for the exposed provider. Because the great majority of occupational HIV exposures do not result in transmission of HIV, the potential benefits and risks of PEP (including the potential for severe toxicity and drug interactions, such as may occur with oral contraceptives, H_2-receptor antagonists, and proton pump inhibitors, among many other agents) must be considered carefully when prescribing PEP. HIV PEP medication regimen recommendations are listed in Appendix A, and more detailed information on individual antiretroviral medications is provided in Appendix B. Because of the complexity of selecting HIV PEP regimens, these recommendations should, whenever possible, be implemented in consultation with persons who have expertise in the administration of antiretroviral therapy and who are knowledgeable about HIV transmission. Reevaluation of exposed HCP is recommended within 72 hours after exposure, especially as additional information about the exposure or source person becomes available.

Source Patient HIV Testing

Whenever possible, the HIV status of the exposure source patient should be determined to guide appropriate use of HIV PEP. Although concerns have been expressed about HIV-negative sources who might be in the so-called window period before seroconversion (ie, the period of time between initial HIV infection and the development of detectable HIV antibodies), no such instances of occupational transmission have been detected in the United States to date. Hence, investigation of whether a source patient might be in the window period is unnecessary for determining whether HIV PEP is

indicated unless acute retroviral syndrome is clinically suspected. Rapid HIV testing of source patients facilitates timely decision making regarding the need for administration of HIV PEP after occupational exposures to sources whose HIV status is unknown. FDA-approved rapid tests can produce HIV test results within 30 minutes, with sensitivities and specificities similar to those of first- and second-generation enzyme immunoassays (EIAs).[60] Third-generation chemiluminescent immunoassays, run on automated platforms, can detect HIV-specific antibodies 2 weeks sooner than conventional EIAs[60] and generate test results in an hour or less.[61] Fourth-generation combination p24 antigen–HIV antibody (Ag/Ab) tests produce both rapid and accurate results, and their p24 antigen detection allows identification of most infections during the window period.[62] Rapid determination of source patient HIV status provides essential information about the need to initiate and/or continue PEP. Regardless of which type of HIV testing is employed, all of the above tests are acceptable for determination of source patient HIV status. Administration of PEP should not be delayed while waiting for test results. If the source patient is determined to be HIV negative, PEP should be discontinued, and no follow-up HIV testing for the exposed provider is indicated.

Timing and Duration of PEP

Animal studies have suggested that PEP is most effective when begun as soon as possible after the exposure and that PEP becomes less effective as time from the exposure increases.[29,30] PEP should be initiated as soon as possible, preferably within hours of exposure. Occupational exposures to HIV should be considered urgent medical concerns and treated immediately. For example, a surgeon who sustains an occupational exposure to HIV while performing a surgical procedure should promptly scrub out of the surgical case, if possible, and seek immediate medical evaluation for the injury and PEP. Additionally, if the HIV status of a source patient for whom the practitioner has a reasonable suspicion of HIV infection is unknown and the practitioner anticipates that hours or days may be required to resolve this issue, antiretroviral medications should be started immediately rather than delayed.

Although animal studies demonstrate that PEP is likely to be less effective when started more than 72 hours after exposure,[30,63] the interval after which no benefit is gained from PEP for humans is undefined. If initiation of PEP is delayed, the likelihood increases that benefits might not outweigh the risks inherent in taking antiretroviral medications. Initiating therapy after a longer interval (eg, 1 week) might still be considered for exposures that represent an extremely high risk of transmission. The optimal duration of PEP is unknown; however, duration of treatment has been shown to influence success of PEP in animal models.[30] Because 4 weeks of PEP appeared protective in in vitro, animal,[29,30,63,64] and occupational[22] studies, PEP should be administered for 4 weeks, if tolerated.

Recommendations for the Selection of Drugs for HIV PEP

The PHS no longer recommends that the severity of exposure be used to determine the number of drugs to be offered in an HIV PEP regimen, and a regimen containing 3 (or more) antiretroviral drugs is now recommended routinely for all occupational exposures to HIV. Examples of recommended PEP regimens include those consisting of a dual NRTI backbone plus an INSTI, a PI (boosted with ritonavir), or a NNRTI. Other antiretroviral drug combinations may be indicated for specific cases (eg, exposure to a source patient harboring drug-resistant HIV) but should be prescribed only after consultation with an expert in the use of antiretroviral agents. No new definitive data exist to demonstrate increased efficacy of 3-drug HIV PEP regimens compared with the previously recommended 2-drug HIV PEP regimens for occupational HIV exposures associated with a lower level of transmission risk. The recommendation for consistent use of 3-drug HIV PEP regimens reflects (1) studies demonstrating superior effectiveness of 3 drugs in reducing viral burden in HIV-infected persons compared with 2 agents,[28,65,66] (2) concerns about source patient drug resistance to agents commonly used for PEP,[67,68] (3) the safety and tolerability of new HIV drugs, and (4) the potential for improved PEP regimen adherence due to newer medications that are likely to have fewer side effects. Clinicians facing challenges such as antiretroviral medication availability, potential adherence and toxicity issues, and others associated with a 3-drug PEP regimen might still consider a 2-drug PEP regimen in consultation with an expert.

The drug regimen selected for HIV PEP should have a favorable side effect profile as well as a convenient dosing schedule to facilitate both adherence to the regimen and completion of 4 weeks of PEP. Because the agents administered for PEP still can be associated with severe side effects, PEP is not justified for exposures that pose a negligible risk for transmission. Expert consultation could be helpful in determining whether an exposure constitutes a risk that would warrant PEP. The preferred HIV PEP regimen recommended in this guideline should be reevaluated and modified whenever additional information is obtained concerning the source of the occupational exposure (eg, possible treatment history or antiretroviral drug resistance) or if expert consultants recommend the modification. Given the complexity of choosing and administering HIV PEP, consultation with an infectious diseases specialist or another physician who is an expert in the administration of antiretroviral agents is recommended whenever possible. Such consultation should not, however, delay timely initiation of PEP.

The PHS now recommends emtricitabine (FTC) plus TDF (these 2 agents may be dispensed as Truvada, a fixed-dose combination tablet) plus raltegravir (RAL) as HIV PEP for occupational exposures to HIV. This regimen is tolerable, potent, and conveniently administered, and it has been associated with minimal drug interactions. Additionally, al-

Box 1: Situations for Which Expert Consultation for Human Immunodeficiency Virus (HIV) Postexposure Prophylaxis (PEP) Is Recommended

Delayed (ie, later than 72 hours) exposure report
- Interval after which benefits from PEP are undefined

Unknown source (eg, needle in sharps disposal container or laundry)
- Use of PEP to be decided on a case-by-case basis
- Consider severity of exposure and epidemiologic likelihood of HIV exposure
- Do not test needles or other sharp instruments for HIV

Known or suspected pregnancy in the exposed person
- Provision of PEP should not be delayed while awaiting expert consultation

Breast-feeding in the exposed person
- Provision of PEP should not be delayed while awaiting expert consultation

Known or suspected resistance of the source virus to antiretroviral agents
- If source person's virus is known or suspected to be resistant to 1 or more of the drugs considered for PEP, selection of drugs to which the source person's virus is unlikely to be resistant is recommended
- Do not delay initiation of PEP while awaiting any results of resistance testing of the source person's virus

Toxicity of the initial PEP regimen
- Symptoms (eg, gastrointestinal symptoms and others) are often manageable without changing PEP regimen by prescribing antimotility or antiemetic agents
- Counseling and support for management of side effects is very important, as symptoms are often exacerbated by anxiety

Serious medical illness in the exposed person
- Significant underlying illness (eg, renal disease) or an exposed provider already taking multiple medications may increase the risk of drug toxicity and drug-drug interactions

Expert consultation can be made with local experts or by calling the National Clinicians' Post-Exposure Prophylaxis Hotline (PEPline) at 888-448-4911.

though we have only limited data on the safety of RAL during pregnancy, this regimen could be administered to pregnant HCP as PEP (see the discussion above). Preparation of this PEP regimen in single-dose "starter packets," which are kept on hand at sites expected to manage occupational exposures to HIV, may facilitate timely initiation of PEP.

Several drugs may be used as alternatives to FTC plus TDF plus RAL. TDF has been associated with renal toxicity,[69] and an alternative should be sought for HCP who have underlying renal disease. Zidovudine could be used as an alternative to TDF and could be conveniently prescribed in combination with lamivudine, to replace both TDF and FTC, as Combivir. Alternatives to RAL include darunavir plus ritonavir (RTV), etravirine, rilpivirine, atazanavir plus RTV, and lopinivir plus RTV. When a more cost-efficient alternative to RAL is required, saquinivir plus RTV could be considered. A list of preferred alternative PEP regimens is provided in Appendix A.

Some antiretroviral drugs are contraindicated as HIV PEP or should be used for PEP only under the guidance of expert consultants (Appendixes A and B). Among these drugs are nevirapine, which should not be used and is contraindicated as PEP because of serious reported toxicities, including hepatotoxicity (with 1 instance of fulminant liver failure requiring liver transplantation), rhabdomyolysis, and hypersensitivity syndrome.[70-72] Antiretroviral drugs not routinely recommended for use as PEP because of the higher risk for potentially serious or life-threatening adverse events include didanosine and tipranavir. The combination of didanosine and stavudine should not be prescribed as PEP due to increased risk of toxicity (eg, peripheral neuropathy, pancreatitis, and lactic acidosis). Additionally, abacavir should be used as HIV PEP only in the setting of expert consultation, due to the need for prior HLA B57-01 testing to identify individuals at higher risk for a potentially fatal hypersensitivity reaction.[28] The FI enfuvirtide (Fuzeon, T20) is also not generally recommended as PEP, unless its use is deemed necessary during expert consultation, due to its subcutaneous route of administration, significant side effects, and potential for development of anti-T20 antibodies that may cause false-positive HIV antibody tests among uninfected patients.

When the source patient's virus is known or suspected to be resistant to 1 or more of the drugs considered for the PEP regimen, the selection of drugs to which the source person's virus is unlikely to be resistant is recommended; again, expert consultation is strongly advised. If this information is not immediately available, the initiation of PEP, if indicated, should not be delayed; the regimen can be modified after PEP has been initiated whenever such modifications are deemed appropriate. For HCP who initiate PEP, reevaluation of the exposed person should occur within 72 hours after exposure, especially if additional information about the exposure or source person becomes available.

Regular consultation with experts in antiretroviral therapy and HIV transmission is strongly recommended. Preferably,

Box 2: Follow-Up of Healthcare Personnel (HCP) Exposed to Known or Suspected Human Immunodeficiency Virus (HIV)–Positive Sources

Counseling (at the time of exposure and at follow-up appointments). Exposed HCP should be advised to use precautions (eg, use of barrier contraception and avoidance of blood or tissue donations, pregnancy, and, if possible, breast-feeding) to prevent secondary transmission, especially during the first 6–12 weeks after exposure.

For exposures for which postexposure prophylaxis (PEP) is prescribed, HCP should be informed regarding the following:

- Possible drug toxicities (eg, rash and hypersensitivity reactions that could imitate acute HIV seroconversion and the need for monitoring)
- Possible drug interactions
- The need for adherence to PEP regimens

Early reevaluation after exposure. Regardless of whether a healthcare provider is taking PEP, reevaluation of exposed HCP within 72 hours after exposure is strongly recommended, as additional information about the exposure or source person may be available.

Follow-up testing and appointments. Follow-up testing at a minimum should include the following:

- HIV testing at baseline and at 6 weeks, 12 weeks, and 6 months after exposure; alternatively, if the clinician is certain that a fourth-generation combination HIV p24 antigen–HIV antibody test is being utilized, then HIV testing could be performed at baseline, 6 weeks after exposure, and 4 months after exposure
- Complete blood counts and renal and hepatic function tests (at baseline and 2 weeks after exposure; further testing may be indicated if abnormalities are detected)

HIV testing results should preferably be given to the exposed healthcare provider at face-to-face appointments.

a process for involvement of an expert consultant should be formalized in advance of an exposure incident. Certain institutions have required consultation with a hospital epidemiologist or infectious diseases consultant when HIV PEP use is under consideration. At a minimum, expert consultation is recommended for the situations described in Box 1.

Resources for consultation are available from the following sources:

- PEPline at http://www.nccc.ucsf.edu/about_nccc/pepline/; telephone: 888-448-4911.
- Antiretroviral Pregnancy Registry at http://www.apregistry.com/index.htm; address: Research Park, 1011 Ashes Drive, Wilmington, NC 28405; telephone: 800-258-4263; fax: 800-800-1052; e-mail: registies@kendle.com.
- FDA (for reporting unusual or severe toxicity to antiretroviral agents) at http://www.fda.gov/medwatch/; telephone: 800-332-1088; address: MedWatch, The FDA Safety Information and Adverse Event Reporting Program, Food and Drug Administration, 5600 Fishers Lane, Rockville, MD 20852.
- The CDC's Cases of Public Health Importance (COPHI) coordinator (for reporting HIV infections in HCP and failures of PEP) at telephone number 404-639-2050.
- HIV/AIDS Treatment Information Service at http://aidsinfo.nih.gov/.

FOLLOW-UP OF EXPOSED HCP

Importance of Follow-Up Appointments

HCP who have experienced occupational exposure to HIV should receive follow-up counseling, postexposure testing, and medical evaluation regardless of whether they take PEP. Greater emphasis is placed on the importance of follow-up of HCP on HIV PEP within 72 hours of exposure and improving follow-up care provided to exposed HCP (Box 2). Careful attention to follow-up evaluation within 72 hours of exposure can (1) provide another (and perhaps less anxiety-ridden) opportunity to allow the exposed HCP to ask questions and for the counselor to make certain that the exposed HCP has a clear understanding of the risks for infection and the risks and benefits of PEP, (2) ensure that continued treatment with PEP is indicated, (3) increase adherence to HIV PEP regimens, (4) manage associated symptoms and side effects more effectively, (5) provide an early opportunity for ancillary medications or regimen changes, (6) improve detection of serious adverse effects, and (7) improve the likelihood of follow-up serologic testing for a larger proportion of exposed personnel to detect infection. Closer follow-up should in turn reassure HCP who become anxious after these events.[73,74] The psychological impact of needlesticks or exposure to blood or body fluid should not be underestimated for HCP. Exposed personnel should be advised to use precautions (eg, use of barrier contraception and avoidance of blood or tissue donations, pregnancy, and, if possible, breast-feeding) to prevent secondary transmission, especially during the first 6–12 weeks after exposure. Providing HCP with psychological counseling should be an essential component of the management and care of exposed HCP.

Postexposure Testing

HIV testing should be used to monitor HCP for seroconversion after occupational HIV exposure. After baseline testing at the time of exposure, follow-up testing should be performed at 6 weeks, 12 weeks, and 6 months after exposure. Use of fourth-generation HIV Ag/Ab combination immunoassays allow for earlier detection of HIV infection.[60,62,75] If a provider is certain that a fourth-generation combination

HIV Ag/Ab test is used, HIV follow-up testing could be concluded earlier than 6 months after exposure. In this instance, an alternative follow-up testing schedule could be used (eg, testing at baseline and 6 weeks after exposure, then concluding testing at 4 months after exposure). Extended HIV follow-up (eg, for 12 months) is recommended for HCP who become infected with HCV after exposure to a source who is coinfected with HIV and HCV. Whether extended follow-up is indicated in other circumstances (eg, for exposure to a source coinfected with HIV and HCV in the absence of HCV seroconversion or for exposed persons with a medical history suggesting an impaired ability to mount an antibody response to acute infection) is unknown. Although rare instances of delayed HIV seroconversion have been reported,[76,77] adding to an exposed person's anxiety by routinely extending the duration of postexposure follow-up is not warranted. However, decisions to extend follow-up in a particular situation should be based on the clinical judgment of the exposed person's healthcare provider and should not be precluded because of HCP anxiety. HIV tests should also be performed for any exposed person who has an illness compatible with an acute retroviral syndrome, regardless of the interval since exposure. A person in whom HIV infection is identified should be referred to a specialist who has expertise in HIV treatment and counseling for medical management. Healthcare providers caring for persons who have occupationally acquired HIV infection should report these cases to their state health departments and to the CDC's COPHI coordinator at telephone number 404-639-2050.

Monitoring and Management of PEP Toxicity

If PEP is used, HCP should be monitored for drug toxicity by testing at baseline and again 2 weeks after starting PEP. In addition, HCP taking antiretrovirals should be evaluated if any acute symptoms develop while receiving therapy. The scope of testing should be based on medical conditions in the exposed person and the known and anticipated toxicities of the drugs included in the PEP regimen. Minimally, laboratory monitoring for toxicity should include a complete blood count and renal and hepatic function tests. If toxicities are identified, modification of the regimen should be considered after expert consultation. In addition, depending on the clinical situation, further diagnostic studies may be indicated (eg, monitoring for hyperglycemia in a diabetic whose regimen includes a PI).

Exposed HCP who choose to take PEP should be advised of the importance of completing the prescribed regimen. Information should be provided about potential drug interactions and prescription/nonprescription drugs and nutritional supplements that should not be taken with PEP or require dose or administration adjustments, side effects of prescribed drugs, measures (including pharmacologic interventions) that may assist in minimizing side effects, and methods of clinical monitoring for toxicity during the follow-up period. HCP should be advised that evaluation of certain symptoms (eg, rash, fever, back or abdominal pain, pain on urination or blood in the urine, dark urine, yellowing of the skin or whites of the eyes, or symptoms of hyperglycemia [eg, increased thirst or frequent urination]) should not be delayed. Serious adverse events should be reported to the FDA's MedWatch program.

REEVALUATION AND UPDATING OF HIV PEP GUIDELINES

As new antiretroviral agents for treatment of HIV infection and additional information concerning early HIV infection and prevention of HIV transmission become available, the interagency PHS working group will assess the need to update these guidelines. Updates will be published periodically as appropriate.

EXPERT PANEL CONSULTANTS

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Information included in these recommendations might not represent US Food and Drug Administration (FDA) approval or approved labeling for the particular product or indications in question. Specifically, the terms "safe" and "effective" might not be synonymous with the FDA-defined legal standard for product approval.

APPENDIX A

TABLE A1. Human Immunodeficiency Virus (HIV) Postexposure Prophylaxis (PEP) Regimens

Preferred HIV PEP Regimen

Raltegravir (Isentress; RAL) 400 mg PO twice daily
Plus
Truvada, 1 PO once daily
(Tenofovir DF [Viread; TDF] 300 mg + emtricitabine [Emtriva; FTC] 200 mg)

Alternative Regimens

(May combine 1 drug or drug pair from the left column with 1 pair of nucleoside/nucleotide reverse-transcriptase inhibitors from the right column; prescribers unfamiliar with these agents/regimens should consult physicians familiar with the agents and their toxicities)[a,b]

Raltegravir (Isentress; RAL)	Tenofovir DF (Viread; TDF) + emtricitabine (Emtriva; FTC); available as Truvada
Darunavir (Prezista; DRV) + ritonavir (Norvir; RTV)	Tenofovir DF (Viread; TDF) + lamivudine (Epivir; 3TC)
Etravirine (Intelence; ETR)	Zidovudine (Retrovir; ZDV; AZT) + lamivudine (Epivir; 3TC); available as Combivir
Rilpivirine (Edurant; RPV)	Zidovudine (Retrovir; ZDV; AZT) + emtricitabine (Emtriva; FTC)
Atazanavir (Reyataz; ATV) + ritonavir (Norvir; RTV)	
Lopinavir/ritonavir (Kaletra; LPV/RTV)	

The following alternative is a complete fixed-dose combination regimen, and no additional antiretrovirals are needed: Stribild (elvitegravir, cobicistat, tenofovir DF, emtricitabine)

Alternative Antiretroviral Agents for Use as PEP Only with Expert Consultation[b]

Abacavir (Ziagen; ABC)
Efavirenz (Sustiva; EFV)
Enfuvirtide (Fuzeon; T20)
Fosamprenavir (Lexiva; FOSAPV)
Maraviroc (Selzentry; MVC)
Saquinavir (Invirase; SQV)
Stavudine (Zerit; d4T)

Antiretroviral Agents Generally Not Recommended for Use as PEP

Didanosine (Videx EC; ddI)
Nelfinavir (Viracept; NFV)
Tipranavir (Aptivus; TPV)

Antiretroviral Agents Contraindicated as PEP

Nevirapine (Viramune; NVP)

NOTE. For consultation or assistance with HIV PEP, contact the National Clinicians' Post-Exposure Prophylaxis Hotline at telephone number 888-448-4911 or visit its website at http://www.nccc.ucsf.edu/about_nccc/pepline/. DF, disoproxil fumarate; PO, per os.

[a] The alternatives regimens are listed in order of preference; however, other alternatives may be reasonable based on patient and clinician preference.

[b] For drug dosing information, see Appendix B.

APPENDIX B

TABLE B1. Information on Human Immunodeficiency Virus (HIV) Postexposure Prophylaxis (PEP) Medications

Drug name	Drug class	Dosing (dosage form)	Advantages	Disadvantages
Abacavir (Ziagen; ABC)	Nucleoside reverse-transcriptase inhibitor (NRTI)	ABC: 300 mg daily; available as 300-mg tablet Also available as component of fixed-dose combination Epzicom, dosed daily (300 mg of 3TC + 600 mg of ABC) Trizivir, dosed twice daily (150 mg of 3TC + 300 mg of ABC + 300 mg of AZT)	Take without regard for food	Potential for life-threatening ABC hypersensitivity reaction (rash, fever, nausea, vomiting, diarrhea, abdominal pain, malaise, respiratory symptoms) in patients with HLA-B*5701; requires patient testing prior to use, which may not be available or practical prior to initiating PEP

TABLE B1 (*Continued*)

Drug name	Drug class	Dosing (dosage form)	Advantages	Disadvantages
Atazanavir (Reyataz; ATV)	Protease inhibitor (PI)	ATV: 300 mg + RTV: 100 mg once daily (preferred dosing for PEP[a]) ATV: 400 mg once daily without RTV (alternative dosing—may not be used in combination with TDF) Available as 100-, 150-, 200-, and 300-mg capsules	Well tolerated	Indirect hyperbilirubinemia and jaundice common Rash Nephrolithiasis Potential for serious or life-threatening drug interactions that may affect dosing Absorption depends on low pH; caution when coadministered with H_2 antagonists, antacids, and proton pump inhibitors PR interval prolongation Caution in patients with underlying conduction defects or on concomitant medications that can cause PR prolongation Must be given with food
Darunavir (Prezista; DRV)	PI	DRV: 800 mg once daily + RTV: 100 mg once daily (preferred dosing for PEP[a]) DRV: 600 mg twice daily + RTV: 100 mg twice daily (alternative dosing) Available as 75-, 150-, 400-, and 600-mg tablets	Well tolerated	Rash (DRV has sulfonamide moiety) Diarrhea, nausea, headache Hepatotoxicity Potential for serious or life-threatening drug interactions that may affect dosing Must be given with food and with RTV
Efavirenz (Sustiva; EFV)	Nonnucleoside reverse-transcriptase inhibitor (NNRTI)	EFV: 600 mg daily; available as 50- and 200-mg capsules and 600-mg tablets Also available as component of fixed-dose combination Atripla, dosed daily (200 mg of FTC + 300 mg of TDF + 600 mg of EFV)	Available as a complete regimen dosed once per day	Rash Neuropsychiatric side effects (eg, dizziness, somnolence, insomnia, abnormal dreaming) common; severe psychiatric symptoms possible (dosing before bedtime might minimize these side effects); use with caution in shift workers Do not use during pregnancy; teratogen in nonhuman primates Potential for serious or life-threatening drug interactions that may affect dosing May cause false-positive results with some cannabinoid and benzodiazepine screening assays Take on an empty stomach
Elvitegravir (EVG)	Integrase strand transfer inhibitor (INSTI)	Available as a component of fixed-dose combination Stribild, dosed daily (150 mg of EVG + 150 mg of cobicistat + 300 mg of TDF + 200 mg of FTC)	Well tolerated Available as a complete regimen dosed once per day	Diarrhea, nausea, headache Nephrotoxicity; should not be administered to individuals with acute or chronic kidney injury or those with eGFR <70 Cobicistat is a pharmacokinetic enhancer to increase EVG exposures and has no antiviral activity but is a potent CYP3A inhibitor Potential for serious or life-threatening drug interactions Must be given with food

TABLE B1 (*Continued*)

Drug name	Drug class	Dosing (dosage form)	Advantages	Disadvantages
Emtricitabine (Emtriva; FTC)	NRTI	200 mg once daily; available as 200-mg capsule Also available as component of fixed-dose combination Atripla, dosed daily (200 mg of FTC + 300 mg of TDF + 600 mg of EFV) Complera, dosed daily (25 mg of RPV + 300 mg of TDF + 200 mg of FTC) Stribild, dosed daily (150 mg of EVG + 150 mg of cobicistat + 300 mg of TDF + 200 mg of FTC) Truvada, dosed daily (200 mg of FTC + 300 mg of TDF)	Well tolerated Minimal toxicity Minimal drug interactions Take without regard for food	Rash perhaps more frequent than with 3TC Hyperpigmentation/skin discoloration If the PEP recipient has chronic hepatitis B, withdrawal of this drug may cause an acute hepatitis exacerbation
Enfuvirtide (Fuzeon; T20)	Fusion inhibitor (FI)	T20: 90 mg (1 mL) twice daily by subcutaneous injection; available as single-dose vial, reconstituted to 90 mg/mL	...	Local injection-site reactions occur in almost 100% of patients Never studied among antiretroviral-naive or HIV-negative patients False-positive EIA HIV antibody tests might result from formation of anti-T20 antibodies that cross-react with anti-gp41 antibodies Twice-daily injection
Etravirine (Intelence; ETR)	NNRTI	200 mg twice daily; available as 100- and 200-mg tablets	Well tolerated and has not had the same frequency of CNS side effects reported as EFV	Rash (including SJS) and hypersensitivity (sometimes with organ dysfunction, including hepatic failure) Nausea Potential for serious or life-threatening drug interactions that may affect dosing Must be given with food
Fosamprenavir (Lexiva; FOSAPV)	PI	FOSAPV: 1,400 mg daily + RTV: 100 mg once daily (preferred dosing for PEP) FOSAPV: 1,400 mg twice daily without RTV (alternative dosing) Available as 700-mg tablet	Well tolerated	Diarrhea, nausea, vomiting, headache, rash (FOSAPV has sulfonamide moiety) Potential for serious or life-threatening drug interactions that may affect dosing Oral contraceptives decrease FOSAPV concentrations Take with food if given with RTV
Lamivudine (Epivir; 3TC)	NRTI	3TC: 300 mg once daily (preferred dosing for PEP) 3TC: 150 mg twice daily (alternative dosing) Available as 150- and 300-mg tablets Also available as component of fixed-dose combination generic lamivudine/zidovudine, dosed twice daily (150 mg of 3TC + 300 mg of AZT) Combivir, dosed twice daily (150 mg of 3TC + 300 mg of AZT) Epzicom, dosed daily (300 mg of 3TC + 600 mg of ABC) Trizivir, dosed twice daily (150 mg of 3TC + 300 mg of ABC + 300 mg of AZT)	Well tolerated Minimal toxicity Minimal drug interactions Take without regard for food	If the PEP recipient has chronic hepatitis B, withdrawal of this drug may cause an acute hepatitis exacerbation

TABLE B1 (*Continued*)

Drug name	Drug class	Dosing (dosage form)	Advantages	Disadvantages
Lopinavir/ritonavir (Kaletra; LPV/RTV)	PI	Kaletra: 400/100 mg = 2 tablets twice daily (preferred dosing for PEP) Kaletra: 800/200 mg = 4 tablets once daily (alternative dosing) Available as 200/50-mg tablets	Take without regard for food	GI intolerance, nausea, vomiting, diarrhea are common PR and QT interval prolongation have been reported; use with caution in patients at risk of cardiac conduction abnormalities or receiving other drugs with similar effect Potential for serious or life-threatening drug interactions that may affect dosing
Maraviroc (Selzentry; MVC)	CCR5 coreceptor antagonist	MVC: 300 mg twice daily (if on concomitant CYP3A inducers, dose may need adjustment by expert consultant); available as 150- and 300-mg tablets	Well tolerated	Abdominal pain, cough, dizziness, musculoskeletal symptoms, pyrexia, rash, orthostatic hypotension Hepatotoxicity that may present with an allergic reaction, including rash Requires HIV tropism testing of source virus before treatment to ensure CCR5-tropic virus and efficacy, which may not be available or practical prior to initiating PEP Potential for serious or life-threatening drug interactions that may affect dosing Dose adjustments for MVC required when given with potent CYP3A inhibitors or inducers
Raltegravir (Isentress; RAL)	INSTI	400 mg twice daily; available as 400-mg tablet	Well tolerated Minimal drug interactions Take without regard for food	Insomnia, nausea, fatigue, headache, and severe skin and hypersensitivity reactions have been reported
Rilpivirine (Edurant; RPV)	NNRTI	25 mg once daily; available as 25-mg tablet Also available as component of fixed-dose combination Complera, dosed daily (25 mg of RPV + 300 mg of TDF + 300 mg of FTC)	Well tolerated and fewer rashes and discontinuations for CNS adverse effects compared with EFV Available as a complete regimen dosed once per day	Depression, insomnia, rash, hypersensitivity, headache Potential for serious or life-threatening drug interactions that may affect dosing Caution when coadministered with H_2 antagonists and antacids Coadministration with proton pump inhibitors is contraindicated Use RPV with caution when coadministered with a drug having a known risk of torsades de pointes Must be given with food
Saquinavir (Invirase; SQV)	PI	SQV: 1,000 mg + RTV: 100 mg twice daily (preferred dosing for PEP); available as 500 mg tablet	Well tolerated, although GI events common	GI intolerance, nausea, diarrhea, headache Pretreatment ECG recommended SQV/r is not recommended for patients with any of the following: (1) congenital or acquired QT prolongation, (2) pretreatment ECG >450 msec, (3) receiving concomitant therapy with other drugs that prolong QT interval, (4) complete AV block without implanted pacemakers, and (5) risk of complete AV block PR and QT interval prolongations, torsades de pointes has been reported Potential for serious or life-threatening drug interactions that may affect dosing Must be given with food

TABLE B1 (*Continued*)

Drug name	Drug class	Dosing (dosage form)	Advantages	Disadvantages
Stavudine (Zerit; d4T)	NRTI	d4T: 40 mg twice daily if body weight is >60 kg d4T: 30 mg twice daily if body weight is <60 kg Available as 15-, 20-, 30-, and 40-mg tablets	Take without regard for food	GI side effects include diarrhea and nausea Hepatotoxicity, neurologic symptoms (eg, peripheral neuropathy), pancreatitis
Tenofovir DF (Viread; TDF)	NRTI	300 mg once daily; available as 300-mg tablet Also available as component of fixed-dose combination Atripla, dosed daily (200 mg of FTC + 300 mg of TDF + 600 mg of EFV) Complera, dosed daily (25 mg of RPV + 300 mg of TDF + 200 mg of FTC) Stribild, dosed daily (150 mg of EVG + 150 mg of cobicistat + 300 mg of TDF + 200 mg of FTC) Truvada, dosed daily (200 mg of FTC + 300 mg of TDF)	Well tolerated Take without regard for food	Asthenia, headache, diarrhea, nausea, vomiting Nephrotoxicity; should not be administered to individuals with acute or chronic kidney injury or those with eGFR <60 If the PEP recipient has chronic hepatitis B, withdrawal of this drug may cause an acute hepatitis exacerbation Drug interactions
Zidovudine (Retrovir; ZDV; AZT)	NRTI	AZT: 300 mg twice daily; available as 100-mg capsule or 300-mg tablet Also available as component of fixed-dose combination generic lamivudine/zidovudine, dosed twice daily (150 mg of 3TC + 300 mg of AZT) Combivir, dosed twice daily (150 mg of 3TC + 300 mg of AZT) Trizivir, dosed twice daily (150 mg of 3TC + 300 mg of ABC + 300 mg of AZT)	Take without regard for food	Side effects (especially nausea, vomiting, headache, insomnia, and fatigue) common and might result in low adherence Anemia and neutropenia

NOTE. This appendix does not provide comprehensive information on each individual drug. For detailed information, please refer to individual drug package inserts. AV, atrioventricular; CNS, central nervous system; ECG, electrocardiogram; eGFR, estimated glomerular filtration rate; EIA, enzyme immunoassay; GI, gastrointestinal; SJS, Stevens-Johnson syndrome.

[a] Certain antiretroviral agents, such as PIs, have the option of once- or twice-daily dosing depending on treatment history and use with ritonavir. For PEP, the selection of dosing and schedule is to optimize adherence while minimizing side effects where possible. This table includes the preferred dosing schedule for each agent, and in all cases with the exception of Kaletra the once-daily regimen option is preferred for PEP. Twice-daily administration of Kaletra is better tolerated with respect to GI toxicities compared with the once-daily regimen. Alternative dosing and schedules may be appropriate for PEP in certain circumstances and should preferably be prescribed by individuals experienced in the use of antiretroviral medications.

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ERRATUM

In the September 2013 issue of the journal, in the article by Kuhar et al (Kuhar DT, Henderson DK, Struble KA, Heneine W, Thomas V, Cheever LW, Gomaa A, Panlilio AL, US Public Health Service Working Group. Updated US Public Health Service guidelines for the management of occupational exposures to human immunodeficiency virus and recommendations for postexposure prophylaxis. *Infect Control Hosp Epidemiol* 2013;34(9):875–892), there are 3 errors. In Appendix Table B1, row 1 ("Abacavir"), column 3 ("Dosing (dosage form)"), "300 mg daily" is incorrect; the correct dosing is 600 mg daily. Also in Appendix Table B1, row 17 ("Tenofovir DF"), column 5 ("Disadvantages"), the text immediately following "Nephrotoxicity" ("should not be administered to individuals with acute or chronic kidney injury or those with eGFR <60") should be deleted. Finally, the correct affiliation for author Ahmed Gomaa is Division of Surveillance, Hazard Evaluation, and Field [*not* "Health"] Studies, National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, Cincinnati, Ohio. The authors regret these errors.

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EMERGENCY

(In Case of Health Issue, Natural Disaster, or Other Emergency)

REQUIRED

1. NOTIFY LOCAL CONTACT(S)
2. CALL ONCALL INTERNATIONAL INSURANCE FOR CONSULT (+1 603-328-1926)
    1. FOLLOW UP WITH ONCALL INSURANCE RECOMMENDATIONS
3. NOTIFY UW EMERGENCY (+1 206-632-0153)

OPTIONAL

- NOTIFY UW MENTOR(S), PROGRAM FACULTY & STAFF
- FRIENDS & FAMILY

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