

University of Washington

DEPARTMENT OF GLOBAL HEALTH



GHCE

Global Health Clinical Elective



2015-16



GUIDE TO YOUR CLINICAL ELECTIVE IN

MALAWI

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Disclaimer:

This booklet is provided as a service to UW students going to Malawi, 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.

CONTACT INFORMATION

Malawi:

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Police			990	
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US Embassy	American Embassy	Area 40 Plot 24 Kenyatta Drive Box 30016 Lilongwe 3	+256-1-773-166 +256-1-773-342 +256-1-773-367 (landlines) +265-999-591-024 or +265-888-734-826 (mobile) +256-774-976 (fax)	http://lilongwe.usembassy.gov/index.html consularlilong@state.gov
Malawian Medical Council		P.O. Box 30787 Paul Kagame Road Lilongwe 3 (across from Lingadzi Inn)	+265-01-727-255	medcom@malawi.net

Former students have recommended **Sister Josepha** for Chichewa lessons. “Sister Josepha is a retired Catholic Nun who lives in a nearby village the now makes her living by teaching Chichewa. She is an exceptional teacher and is very happy to help you learn some basics over a couple lessons. We asked for two lessons, which can be done at the mission, and she was able to tailor them to helping us functioning in the hospital. She will probably not ask for payment but we paid 1000 MK per lesson per person.”

U.S. CONTACTS

	Name	Address	Telephone	Email or Website
UW International Emergency #	-	-	+1-206-632-0153	www.washington.edu/globalaffairs/emergency/
GHCE Director	Dr. Scott McClelland	Harris Hydraulics Building, Room #315 1510 San Juan Road Seattle, WA 98195	+206-473-0392 (cell) 001-254-731-490115 (Kenya)	mccllell@uw.edu
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Insurance	OnCall 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

ENTRY REQUIREMENTS



- **U.S. citizens may enter Malawi without a Visa for stays up to 30 days. An extension may be available to you, with a small fee**
- You will need to have a **passport valid for at least 6 months** past your anticipated travel dates, and you may need proof of a return flight. Your passport will be stamped with a 30-day approval at the airport.
- **For stays longer than 30 days, you will need to apply for an extension at a Visa Services Center.** There are centers located in Lilongwe and Mangochi. Visitors may apply for up to 2 extensions, and a letter of support from the hospital is required.
- All students who will be doing medical work must **register with the Medical Council of Malawi** and pay a one-time fee of \$150. This can be done in Lilongwe across from the Lingodzi Inn (a short taxi ride from Old Town), or in Blantyre. *This cannot be done in Mua Mission, so you should be sure to do it before you leave Lilongwe!* When you go to register, you will need a letter of good standing from the Department of Global Health, your medical student ID, your passport, \$150, two passport-sized photos, and a lot of patience. The process can be “quick” and take an hour or may take several hours. Don’t go during lunch hours (12-2pm) because you are likely to find everyone gone for lunch. To learn more, visit the Medical Council’s website at www.medicalcouncil.org/.



- **Yellow Fever:** Malawi is outside of Africa’s yellow fever zone, and the CDC does not recommend vaccination for visitors to the country. However, the government *requires travelers to have proof of yellow fever vaccination if arriving from a country where yellow fever is endemic.* You may need yellow fever immunization, therefore, if you are planning on traveling to or having a layover in a country within the yellow fever zone. For the latest information go to CDC Information for travelers.

ABOUT YOUR ROTATION

Malawi has some of the worst health statistics in the world. The life expectancy for the people of Malawi is around 50 years of age, while 120 out of every 1000 children die before the age of five. It has a large HIV burden: about 12% of the population aged 14-49 is infected with the virus, and shows no signs of leveling off. Approximately 80,000 people in Malawi die from HIV/AIDs annually, and there are approximately 600,000 AIDS orphans. The HIV epidemic has also fueled a dramatic increase in tuberculosis infections in the country, with current estimates putting the incidence at 377 cases per 100,000. Malaria is also a major problem, and is responsible for about 40% of hospitalizations of children and 40% of all hospital deaths. Malawi also suffers from a huge shortage of healthcare workers: there are only two physicians and 59 nurses for every 100,000 people, the worst statistics in all of sub-Saharan Africa. There are only around 260 physicians for the entire country. Part of this is due to “brain drain;” in 2000 about 60% of Malawi-born physicians practiced outside of the country, and there are more Malawian physicians in the city of Manchester than in all of Malawi.

The healthcare system in Malawi is a mix of public and private institutions. Care in the public system, including medications, is free to all citizens. However, the public health centers are often underfunded, understaffed, and undersupplied. The public system is divided into three tiers: the bottom tier consists of the many rural health centers throughout the country. These centers are often the only western medical facilities that most Malawians ever encounter. Unfortunately, there are virtually no doctors and very few nurses at the rural hospitals, medications are in short supply, and what equipment is available is often antiquated, broken, or fallen into disuse. The middle tier consists of the 27 district hospitals, intended as regional referral hospitals, but things here are not much better. The top tier consists of the urban tertiary care centers, but even these are poorly able to handle the growing influx of HIV/AIDs, tuberculosis, malaria, childbirth, accident cases and multitude of other medical needs.

Private hospitals are often better equipped, but charge fee for service. Mua Mission Hospital is one of a network of hospitals known as the **Christian Health Association of Malawi (CHAM)**. These function basically as private hospitals with some support from the government. The government provides some staff salary support and money for maternal care, but the remainder of the financing comes from fee-for-service payments along with international donations. Financing is usually quite tight as the hospital tries to balance its sources of income, which are often inconsistent. In the past, Mua had expatriate staff, administration, and funding. Over the past decades, Mua has transitioned to a mostly Malawi staff and administration, with the exception of a Congolese physician. Despite the changes and challenges, the hospital has survived—sometimes thriving, sometimes struggling.

Traditional healers are very popular and are commonly used by the community. Treatments often consist of herbal remedies and/or tattooing. They are available in most villages and they often get the first crack at treating health conditions.

The major workhorse of the formal health care system is the **Clinical Officer**. Their training and role is a bit similar to that of a Physician Assistant in the United States. They see patients, write prescriptions, and sometimes do basic surgical procedures. Their training requires 3 years of education followed by one year of internship, after which they are granted a “Diploma in Clinical Medicine.” **Medical assistants** receive 2 years of formal training, earning a Certificate in Clinical Medicine. Unlike clinical officers, medical assistants have no internship requirements and are not expected to perform surgical procedures such as Cesarean deliveries. In Malawi, a medical doctor receives 5 years of training; it is considered an undergraduate degree -MBBS (Bachelor of Medicine, Bachelor of Surgery). An **MMED** (Masters of Medicine) is similar to a person who has completed a residency. Malawi has had its own medical school since 1991.



Mua Hospital was founded in 1911. It is the regional hospital for the 130,000 people living in the surrounding areas. The vast majority are quite poor and survive by subsistence farming: raising maize, pumpkins, tomatoes, chickens, goats, etc. There are large numbers of children in the community. As in the rest of Malawi, HIV/AIDS, TB, and other infectious diseases are common. The hospital is located on the beginning of the Dedza escarpment and attached to one of the oldest and well-known Catholic Missions in Malawi, which was established in the late 1800’s. It has maternity, pediatrics, general medicine, and tuberculosis wards. They have a single operating theater, a minor procedure room, and a dental clinic. There is an urgent care clinic known as “OPD” as well as outpatient clinics offering antenatal care and HIV treatment, testing, and counseling. Diagnostic imaging consists of a pediatric X-ray machine and an ultrasound machine. If you order these tests, you will be expected to read the Xray films yourself and to perform your own ultrasound. There is a small laboratory capable of doing hemoglobin measurements, HIV

testing, VDRL, blood typing and cross-matching, and hepatitis B screening (surface antigen only). Microscopy is available for looking at urine sediment, doing malaria blood films, AFB stains, and peripheral smears. Special peripheral blood smears can be useful for evaluating for sickle cell disease. WBC, platelet counts, and gram stains are typically not available due to lack of reagents. Urine dipsticks are sometimes available, and the lab can look for ova/parasites in the urine (schistosomiasis). The pharmacy and its supplies vary day to day, but when fully supplied usually has at least something available to treat most conditions, although it might not be the first line (or second line) choice.

The medical staffing is in constant flux, but most recently consists of **Dr. Kileya**, 2 clinical officers, 2 nurse anesthetists, 2-3 medical assistants, several nurses and midwives, and a number of ward assistants. The clinical officers vary in expertise and ability but basically manage everything on the wards and handle most procedures. The medical assistants are involved in outpatient treatment, diagnostics, and triage. The midwives and nurses handle the normal and uncomplicated deliveries, and alert the clinical officers if they need assistance. Nurses also handle night triage and hospital admissions with on call clinician support. Dr. Kileya fills the holes in the schedule for the clinical officers, does advance procedures, consults on difficult patients, and assists with some administration and management issues. The staffing is stretched pretty thin relative to what is needed and medical students will be expected to help with the workload.

Students will be helping to care for hospitalized patients, including participating in ward rounds, writing orders, and doing procedures. They will also be expected to help see patients presenting to the HIV clinic (be sure to review clinical staging, immune reconstitution syndrome, etc.) Students should attend weekly staff meetings, teaching conferences, and participate in village visits. They will generally be engaged in clinical duties Monday through Friday, as well as half a day on Saturday. They may take overnight call at their discretion.

Daily Life at Mua Hospital

Morning report is at 8:00 am (or whenever a critical mass arrives), following a morning prayer at 7:30, and nurses will report on the patients admitted overnight. Usually the Clinical Officers will do morning rounds in their assigned wards every other day; former students have preferred to do daily rounds when feasible. The hospital closes for lunch from 12-2pm (including lab and pharmacy). As a student, you set your own schedule. Previous students have spent 2-3 weeks in each ward (General, Maternity, Peds) and helped out in the outpatient department (OPD) when things were slow. There is also a small Private Wing for VIP patients who pay extra (this often doubles as the staff temporary housing area).

The OPD is great place to spend a few mornings during your first week—you'll get a crash course in the most common diseases, especially malaria. Students can also help staff the minor theatre for basic procedures (suturing, I&D). Students can choose to visit some of the specialty clinics including Hope Clinic (HIV/AIDS) on Tues/Th mornings and Antenatal on Friday mornings. It may be possible to visit some outreach clinics, depending on the status of the fuel shortage and your own interest in arranging that.

The hospital is “open” from 730-5pm on weekdays, and 730-12 on Saturdays. On nights and Sundays, the nurses in Peds, Maternity, or General Ward will triage the patient and admit if necessary. If the nurse needs further assistance with the patient, he or she will send for the On-Call medical assistant or clinical officer to come and assess the patient.

Mua remains a Catholic hospital. General assembly, an optional morning prayer session starts around 7:30 am. Abortion is not culturally acceptable in Malawi, but regardless, you will see women admitted after complications from “herbal” abortions.

Health & Healing at Mua

Healing is approached in an entirely different manner by traditional healers, the preferred first line for most patients. The first question asked when a patient is ill is not “What made him sick?” but rather, “Who made him sick?” Traditional healers will divine the person or spirit to blame, as well as the motivations for wishing one harm. Oftentimes, a jealous neighbor or an upset ancestor might be to blame. Herbs, protective charms, tattoos, and other implements are used to combat this witchcraft. “Preventative medicine” has a big role in Malawi healing, but it's not necessary preventing disease—it's preventing evil magic. Shamans will combat witchcraft with pre-emptive strikes against evil doers. Vaccines do fit nicely into this worldview however, especially since it is an injection placed in bloodstream of the always vulnerable child, one favorite target of witches.

Malawi patients would not talk to their Western physician about such matters. Usually, when medical providers ask when an illness began, they will hear the polite lie, “Dzulo” or yesterday. Many (if not most) patients bear tattoos and other signs of traditional attempts made before the patient or their family decided to try Western medicine.

While a Malawi traditional healer instinctively divines the illness and its cause, the Western doctor asks a hundred questions and orders tests. The Malawi healer understands the family and village politics and implements his cure not just for the patient but for the underlying problem in the family and community that caused the illness; the Western doctor gives inert looking tablets. All in all, the Western approach must be supremely unsatisfying to the Malawi patient. That said, from the sometimes dramatic recoveries that occur in the wards, most Malawians take a sensible approach and cover their bases, taking the advice of both healers without any sense of complication or feeling of contradiction.



COUNTRY OVERVIEW

Malawi, a small, landlocked country in southern Africa, is known as the “warm heart of Africa.” It is one of the most densely populated countries in the world today, and is one of the poorest nations in Africa, with most of the population working as subsistence farmers. Malawi ranks 171 out of 187 countries on the UN’s human development index. Things have been made worse in the past two years when international donors, who used to contribute towards 40% of the national budget, severely curtailed aid citing concerns over mishandling of the economy and human rights abuses. As a result, foreign currency and fuel are in very short supply, further crippling the economy. People have taken to trying to store barrels of fuel in their homes, and will queue up overnight in hope of purchasing a bit of petrol. In 2012, President Bingu Mutharika died from cardiac disease, allowing his political rival and vice president Joyce Banda to peacefully assume power. She has worked to re-establish ties with international donors. Within weeks of becoming president, she de-valued the kwacha, resulting in a better flow of forex into the country and reduction in the nation-wide fuel shortage. However her presidency was riddled with scandal because of “cashgate” when it was discovered that many of the Malawian Ministries were found to be siphoning donated funds for personal gain.

In May 2014 she lost her presidency to Peter Mutharika, the brother of the second president.

Malawi is a new democracy and as many new democracies in Africa has yet to smoothly adapt to this new form of government.

People

The people of Malawi belong mainly to various central Bantu groups. The three main tribes are Chewa, Ngongwi, and the Yao. The tribes intermarry freely and have not shown evidence of inter-tribal violence or intolerance that has plagued other sub-Saharan African nations. Chewa and Ngoni tend to be Christian, and the Yao tend to be Muslim.

Additionally, there is a group of Lomwe, who live south of Lake Chilwa. Other indigenous Malawians include the Tumbuko and Tonga, who are predominant in the north, and the Ngonde.

In the 19th century, the Ngoni (an offshoot of the Zulus) arrived from South Africa with the famous march of Shaka Zulu, and the Yao arrived from Mozambique, bringing with them the Muslim religion and the Portuguese slave trade. (This history of tribal migrations, along with the arrival of Dr. Livingstone and other missionaries, is central to Malawi’s formation and worth reading!)

There are a few thousand Europeans, mainly of British origin, including descendants of Scottish missionaries. There are also small numbers of Portuguese, Asians, and persons of mixed ancestry. Indians run many businesses and form much of Malawi’s middle class. At present, 55% of the population is Protestant, 20% is Roman Catholic, 20% is Muslim and 3% of the population follows indigenous beliefs.

History

Malawi was known as Nyasaland under the British Federation until it achieved independence as Malawi in 1964. Hastings Banda, who had returned from a successful medical practice in London to fight against colonialism and help lead the country to independence, became Malawi's first president. In 1971, he declared himself President for Life, but over time he became increasingly unpopular among the people of Malawi. His regime collapsed in the face of mounting internal and international pressure in 1993. The former Bingu wa Mutharika, who gained the presidency in 2004 in a disputed election, and was re-elected in 2009 in an election with high voter turnout that was regarded as free and fair. Recently local people are become increasingly the president as food and fuel prices escalate. This led to riots breaking cities in July of 2011. Bingu died in 2012 from cardiac disease. VP Joyce formed her own political party apart from the president's, assumed peacefully and has set about repairing damage wrought by the administration.



President Bingu wa Mutharika

President is election, and generally dissatisfied with out in several Banda, who power former

Malawi received support from the West during the Cold War, and maintains good diplomatic relations with principal Western countries. Its close relations with South Africa throughout the apartheid era strained its relationship with other African nations, but these have improved since the fall of apartheid. Malawi continues to have strong ties to South Africa. Between 1985 and 1995, Malawi accommodated more than a million refugees from Mozambique. This crisis placed a substantial strain on Malawi's economy, but also drew significant inflows of international assistance. In 1996, Malawi also received a number of Rwandan and Congolese refugees seeking asylum; unfortunately these refugees have limited rights within the country and are generally confined to refugee camps.

CLIMATE & GEOGRAPHY

Malawi is located in southern Africa, east of Zambia, west of Tanzania, and north of Mozambique. It is part of Africa's Great Rift Valley, and covers nearly 118,500 square km (roughly the size of Pennsylvania). The country is dominated by Lake Malawi, the third largest lake in Africa, which runs nearly the entire length of Malawi and occupies nearly 20% of the country. The Shire River flows out of Lake Malawi at the southern end, running in to Lakes Malombe and Chirwa and finally emptying in to the great Zambezi River in Mozambique. West and south of the lake are elongated plateaus with rolling plains, rounded hills, and some mountain peaks. As Malawi looks to the future it faces issues of deforestation, land degradation, and water pollution from agricultural runoff, sewage and industrial wastes.

Variations in altitude in Malawi lead to wide differences in climate. In general, the seasons may be divided into cool (May to mid-August), hot (mid-August to November) and rainy (November to April). The areas near the lake have long hot seasons and high humidity, with a mean annual temperature of 75° F. Lilongwe, in central Malawi, has somewhat more moderate temperatures due to its higher elevation of at 3,415 ft. Precipitation is heaviest along the northern coast of Lake Malawi, and overall the country averages about 30–40 in. annually, about the same as Seattle.

LANGUAGES

Official languages are **Nyanja (Chichewa), Tumbuka, and English**. Books on basic Chichewa are available on Amazon.com. The 2015 students left a Chichewa book on site; it may still be there for you! Most people with higher education will be able to speak some English.

Additional languages spoken in Malawi include Bemba, Bengali, Fipa, Greek, Gujarati, Portuguese, Shona, and Urdu, reflecting immigrant groups from a variety of countries.

Basic Chichewa

GREETINGS:

When you meet someone, they will probably say:

“Muli bwanji?” (how are you)

You reply:

“Ndili bwino” (I’m fine.)

Then, in order to be polite, you must say:

“Kaya inu?” (and you?)

and they’ll say “Ndili bwino” also.

After the greeting, one or both of you will often say:

“Zikomo (kwambiri).” (Thank you (very much))

OTHER USEFUL WORDS/PHRASES:

See you later — Tionana

See you tomorrow — Tionana mawa

I am happy — Ndakondwa

I am sick — Ndikudwala

I have arrived— Ndafika

I have departed — Ndanyamuka

I am tired — Ndatopa

Food — chakudya

Water — madzi

Toilet — chimbudzi

Where is the toilet? — Chimbudzi chili kuti



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 usually purchase clothing locally: this helps make sure that they are more appropriate to local conditions, and help out the local economy. *Shoprite* is a large shopping center in Lilongwe and will have anything that you may need as a "Western" convenience, such as toiletries. Throughout the country you can find food and other supplies at stores like *Peoples*, *Metro*, and *Cash and Carry*. Prices are surprisingly high, however.

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, or a passport card can also come in handy. Passport pictures are required for the Medical Council of Malawi.

Be sure to bring:

- Passport, valid for at least 6 months
- A letter of support from the UW and a copy of your student ID
- Travel itinerary, receipt, and copy of e-tickets
- Travel insurance documents
- Credit cards, including the one you used to purchase your airplane ticket (Please note that credit cards are not accepted in most places, even in Lilongwe. Plan to use cash. Beware that there are no ATMs in Mua and withdrawing money can be problematic. Consider travelers' checks for paying for room and board. *The two 2015 students paid \$600 shared housing for six weeks.
- Personal medications (see below)
- GHCE Syllabus and medical textbooks
- Stethoscope and other medical supplies (see below)
- Back-up pair of glasses, if needed
- Sunscreen and mosquito repellent
- Power adapters (Malawi uses the British-type plug)
- Flash drive
- Swimsuit



- Hat (for protection from sun and rain)
- Flip-flops or Crocs
- Sturdy, comfortable shoes that look nice enough for the hospital
- Hand sanitizer – several, including one for you to carry in white coat pocket.

Clothing Suggestions:

- Dress is more conservative. Women should generally wear longer skirts that cover the knees
- Simple dress clothes are best for students.
- Shoes should be comfortable, closed-toe, appropriate for the climate and formal enough for the hospital.
- A pair of flip flops is useful for around the house, in showers, etc.
- A rain jacket and umbrella can be useful for the rainy season.
- Bring a few dressy/going-out outfits.

Toiletries:

Most basic items will be available for purchase locally, although they can be a bit expensive. Wet wipes can come in handy. A small roll 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 if needed.

Suggested Personal Medical Supplies:

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

Supplies for the medical wards: *Plan on leaving behind any supplies or equipment you bring*

White coat	Hand sanitizer (handwashing is an issue and hand sanitizer is not available)***
Penlight/flashlight	
Stethoscope	A pair of safety glasses
Sterile surgical gloves in your size (hosp has limited 7.5s only)	N-95 Masks
Otoscope – only if you plan to leave it	Latex gloves
Inexpensive watch for taking vitals	Pens & paper
	Portable Pulse oximeter

Other Suggestions:

- Earplugs
- Water bottle for boiled water (The priests at Mua Mission have clean, filtered water on hand). Your own water filter is ideal, so you can refill on your own.
- A small laptop is recommended, though guard against theft and viruses. There is no internet, so you will have to purchase a “dongle” for internet, but service is still spotty.
- An iPad with a keyboard, or an iPhone works well. There is a desktop computer at the mission that you can use, but it has no internet.
- Flash drive
- Digital camera and charger
- Small notebooks
- Headlamp and small flashlight (electricity can be unreliable)
- MP3 music player and/or a small shortwave radio
- Extra batteries
- Extra food (energy bars, dried fruit, etc.)
- Reading material – some reading materials & DVDs available at the mission
- A Chichewa-English dictionary
- A map of Malawi
- Plan on bringing an unlocked cell phone or purchasing one locally

READING SUGGESTIONS



- *Brandt Travel Guide, Malawi or Lonely Planet* (seems to have more accurate phone numbers)
- *Tiyeni!: Chichewa Language Course for Newcomers to Malawi*, by Celia Swann
- *The Boy who Harnessed the Wind*, by William Kamkwamba
- *Dark Star Safari*, by Paul Theroux
- *Anything* by DD Phiri, a Malawi author and historian

MONEY



- The **Kwacha** (MWK) has been the Malawian currency since 1971. It is divided into 100 **tamabla**. Common bills are 20, 100, and 500.
 - As of December, 2015, **\$1 = 613 Kwacha**.
 - Money can be changed in Salima, Lilongwe, Blantyre, and sometimes Mangochi. Forex bureaus tend to offer better rates than banks. (There is one across the street from the Nico center in Old Town just a few blocks from Mufasa's). Be sure to exchange an adequate amount of money before traveling to rural areas. It is best to bring clean, newer issue U.S. bills (printed after 2007) in \$20.00 or \$100.00. Older and marked bills may not be accepted. Both airports also have Forex Bureaus.
- ATMs will allow you to draw local currency of a VISA card. Using your Visa is probably better than taking a large amount of US Dollars. As of Spring, 2015, there was a 40,000 Kwacha limit per transaction, and 120,000 Kwacha per day. Plan ahead to pay room and board. Be sure to contact the bank that issued your Visa card to alert them that you will be in Malawi, or they will probably freeze your account suspecting fraud. Banks tend to charge different foreign currency conversion fees, so you may want to check ahead of time.
- According to Malawi Law, travelers must declare all foreign currency when entering Malawi, regardless of its purpose or amount. Travelers should only exchange foreign currency at the bank or approved Foreign Exchange bureaus. Any currency declared at entry may be expatriated without further authorization. With bank approval, an individual may export up to \$2000 per trip. Otherwise an individual is not permitted to expropriate currency and it will be confiscated at the point of departure.
- **Other tips:**
 - Write down your bank card's 1-800 number for emergency cancellation on a separate, safe piece of paper in case of theft.

- In small towns, avoid traveling with large denomination bills– it’s much easier for the seller to raise the price than to find a way to give you change.
 - Bring U.S. dollars or travelers checks for rent and administrative fees.
 - The Kwacha cannot be exchanged in any other country so be sure to use them all before you leave the country.
- o **Tipping etiquette:**
 - Tipping is common in Malawi, though less so than in the US. Tip about 10% for waiters/other service workers. Often Malawians will offer to help carry luggage or give directions for a ‘tip’ (around 50 kwacha will suffice).
 - o **Typical costs of basic items when the Kwacha was worth Mk 220= \$1**
 - Shampoo: 900 kwacha (\$2.00)
 - 1L water=250 kwacha
 - 1 beer=300 kwacha
 - Loaf of bread=250 kwacha

TRANSPORTATION

GETTING THERE

The most direct and often cheapest way to travel to Malawi is via Johannesburg. Most international flights land at **Lilongwe**, Malawi's capital, but several flights, especially those from Johannesburg and Harare, land at the business centre of **Blantyre** in the south. You can fly to Johannesburg via New York or London, and then directly on to either Lilongwe or Blantyre via South Africa Airlines. It may help to stay overnight in Johannesburg and fly out the next day Former students have been told to avoid Malawi Air.

Johannesburg – If you have to stay overnight, prior students stayed at Shoestrings Airport Hostel. “The owner was very friendly, it is frequented by Peace Corp Volunteers en route to various places in Africa. The owner picks you up and drops you off at the airport for free.” Contact Philip about staying at the Catholic missions. They are everywhere, cheap, clean, and friendly to U.S. travelers.

Lilongwe – Once you arrive in Lilongwe International Airport, you will need to take a taxi to the city. The airport is about 30 minutes from the city itself and a marked cab cost you about 4,500 Kwacha. There are small money exchange booths in the airport, just after you collect your luggage. You will need to exchange at least a small amount of money in the airport to pay for a cab. Public transportation from the airport is also an option, but would be very difficult with several weeks’ worth of luggage. There are several porters who will request to carry your baggage for a tip-an appropriate tip is 50-100 kwacha.

Prior students report good luck staying at Mufasa's Backpackers Lodge or Kiboko Lodge in Lilongwe. "They are in the center of old town, very clean, nice showers, lots of Peace Corps Volunteers, is secure, and has several stores and restaurants within walking distance. They offer rides to the airport and main bus station for good prices." They will be moving soon to a new location, which is still walkable to old town. You can book online.

GETTING AROUND MALAWI

Malawi's principal highways are generally in good condition, although safety hazards include the lack of road shoulders, frequent potholes, pedestrians, bicyclists, and livestock. Secondary roads are in poor repair and may be impassable to all but four-wheel drive vehicles during the rainy season (November-April).

Public transportation primarily consists of **minibuses** which can be unreliable and accidents are common. Modern **coach buses** are increasingly common on the main cross-country routes. Minibuses run all the way between Dar es Salaam and Lilongwe with stops in the Songwe border crossing, Kyela, Mzuzu and Karonga. From Zambia there are both direct buses and minibuses between Lusaka and Lilongwe with additional stops in Chipata and the Mchinji border. From Mozambique in Quelimane and Nampula you can get minibuses to the Milange-Mulanje border. From there you can reach Blantyre.



- **Axa Buses:** "Best travel method in Malawi." Makes scheduled stops only, so usually fewer stops. About the same price as minibuses but travel less often. Ask the locals for a rough schedule. However, these also wait until they are full to depart, which can take much longer than the minibus, since they are much larger.
- **MiniBuses (Matolas):** By far the easiest way to travel but not always comfortable. These can be cramped, smelly rides but are frequent and easy to catch. If a minibus is not available, a lorry (pickup truck) is often available to carry patrons in the back. These are less safe and should generally be avoided.
- The main bus station in Lilongwe is easy to find and most taxis will give you a lift to the front gate. From the main bus station, you can catch an AXA bus (the main bus system) or minibuses.
- Operators will try to charge 'mzungu' prices so try to barter a lower price. As of 2011, a ticket between Lilongwe and MUA on AXA is about 1000K and about 800K on a minibus.
- Don't travel at night. The roads are particularly dangerous at night.
- **Bicycling** is the main means of transportation in Malawi. Cheap Chinese bicycles are everywhere in the country.

GETTING TO MUA

Contact Mua Mission beforehand. The priests make frequent trips to and from Lilongwe, where they also have a missionary house. Past students offered ~4,000 Kwacha for gas money but it was not expected. This is probably the most challenging part of your trip but is really not much of a problem if you get on the right bus. The buses leave once they are full, there is really no set schedule. The first buses Mua leave around 6:30-7:00 AM and there are a couple different options that will get you to Mua.

(1) Get to the Main Bus Station in Lilongwe - If you stay at Mufasa's, ask for a ride to the main bus station. The main bus station is the central hub for the AXA buses and minibuses in Lilongwe. There is also a busy market and commercial area nearby and things get quite congested.

(2) Find the AXA bus area - Once you arrive, ask or look for the large "AXA" buses. People may try and get you to use a minibus or "matola", just remember it is their job to recruit riders, and say you just want to take an AXA bus. Malawians are in general very nice and helpful.

(3) Find a AXA bus that will pass by Mua - Once in the AXA bus area, ask or look for a bus heading to either Mangochi, Balaka, or Blantyre via Salima. These buses will go directly to Mua and will let you off. Before you board ask the driver if he will stop at Mua, they generally will if they know someone need to get off. **Alternatively, Find a Minibus to Mua** - If one of these buses cannot be found, take a bus to Salima and get off at the Salima bus depot. Then transfer to a minibus heading for Balaka or Mangochi or Blantyre, they will also stop at Mua on the way.

(4) Estimated Cost for travel to Mua - Payment of transport occurs after you get on the bus or minibus. It is probably a good idea to ask how much it will cost to get where you are going, just to prevent any problems. Most things in Malawi have a "mzungu" price and a Malawian price, but don't let them get away with anything and everything but remember that the difference between 500 MK and 1000 MK is about 1 USD. The AXA buses have set fees, but minibuses are a bit different. It should cost about 1000-1500 MK to get from Lilongwe to Mua on a AXA bus. You should expect to pay about 850-1000 MK on a minibus.

(5) Arrive at Mua, Head up the Hill - Once you get to Mua, start heading up the hill. It is about a kilometer or so to the mission and the path is well traveled. If you have lots of luggage and don't want to carry it, there are bicycle taxi's or about anyone will happily help for a couple hundred MK. The people in Mua are very friendly, but they are villagers and the percentage that speak English really drops off compared to Lilongwe. The way up to Mua Mission is pretty straight forward. You go past the market and some houses, start up the hill, stay right at the first "Y", continue past the some houses, the hospital, and the church, and you will see the Mission on your left. There are decent signs and directions to the hospital and you can ask people if you feel you are lost. You can call the priests too, and they can come collect you from the bus depot if they're nearby.

LEAVING MALAWI

There is **no** departure tax.

LODGING

MUA:

MUA Catholic Parish

“Staying at the Mission, you will be very comfortable considering what living conditions are in the village. They are simple rooms but comfortable and safe, and include bathrooms. They have mosquito nets and boiled water available, and electricity/running water most of the time. Meals are taken together with the Fathers. They share a hired cook who is a local lady. We never had any significant complaints about the food. There is also a security guard and a cook. If you have additional guests or visitors over a weekend or something, there is also a Hostel affiliated with the cultural center in Mua that is run by German volunteers. Rates as of Spring, 2015 were \$15/day per person; ~\$600/USD/person total

MUA Hospital Fees

- \$200 per student but please verify cost with Mua contacts before traveling.

COMMUNICATION:

CELL PHONE USE

There are more than 1.4 million cellular phone users in the country. The service is widespread, efficient, and fairly affordable. The two main suppliers are **Airtell** and **TMN**. There is coverage around and between the main cities: Lilongwe, Blantyre, Zomba and Mzuzu, but coverage may be sparse in other parts of the country.

- There are a number of vendors of cell phone and SIM cards around Old Town. Prior students used Alltell and felt that the service seemed pretty good everywhere they went. If you have an unlocked cell phone, you will only need to purchase a SIM card, which can be done cheaply. You then buy pre-paid minutes as you go. 100 units cost 100 MWK. It is about 200 units per minute to call the US and about 50 units per text to the US. Local calls take 50K per minute and local texts are 10k per text. All incoming calls are free, so your family can call you on Skype and it will not cost you. It will cost them about 16 cents per minute. If traveling outside of a city, buy lots of minutes before you go, as recharges can be harder to find in more rural areas. Units are available in Mua however. You can buy a new phone at the airport for under \$20.
- Phone calls to the U.S. are expensive. Have family back home call you on Skype or using calling cards.
- Calls to Malawi start with 011-265 or +265.
- Calling people on their cellular phones is generally the best way to communicate with your local program coordinators.

TIME DIFFERENCE: Malawi is 10 hours ahead of Seattle. 9 hours ahead during daylight saving time.

INTERNET

- Internet cafes are common in urban areas (not Mua) and access costs around 5-7K/minute.
- Internet can be painfully slow, best used in the early mornings or late at night. To save time, write your e-mails in word and paste into your e-mail message later. Be careful, however, as computer viruses thrive in Africa. You can download virus protection software from the UW for free. Also, always sign out of your email account completely before you leave, to prevent fraud.
- The phone companies offer WiFi cards (“dongles”) that plug into your USB port and allow you to have internet access anywhere there is a cell phone signal. The connection is very slow, however. Dongles cost around \$30. Unfortunately, the coverage is poor in the Mua area.
- Apparently data packages for smart phones are quite reasonable in Malawi! If you have an unlocked smart phone, this might be a good option to check email. Data packages of 2 MB, were available from Airtel for ~\$6,000 Kwacha, and are available in Lilongwe
- Internet is available at MUA hospital if the electricity is working, but there have been major issues with connectivity on internet and cell phone.

FOOD



- Malawi offers a wide variety of food and drink. The local staple diet is maize, which is ground down into maize flour. The maize flour is then mixed with water and boiled down into a pulp; this is known as **Nsima**, eaten with vegetables, chicken, fish, meat which again are cooked in different ways and eaten with your right hand. Not so much availability of variety in Mua.

In cities:

- Most restaurants offer the local delicacies, however if you’re looking for International food chains you may find them in the big cities. In the cities, western-style restaurants (pizza, Chinese, Italian, Indian, etc) serve meals at slightly less than US prices. Recommended places to eat are **Nobel Chinese** and **Mama Mia’s** for nicer meals, **Sana** (right across from Mufasa’s) is cheaper and adequate, there is also a chicken and pizza place next to the shopping center that houses “Game,” across from Shoprite.
- Street food is abundant in Malawi (especially British style chips), but can be hazardous.
- Staples such as flour, sugar, salt and oil are available locally, though shortages do occur at times. Imported supplies of these items are normally available, but expensive. Meat, poultry, eggs,

vegetables and fruits are usually available and of excellent quality but subject to seasonal fluctuations. Good quality fish from Lake Malawi, including Chambo (tilapia) are available except during October-March when fishing restrictions apply.

- Western-style grocery stores are located in Lilongwe, Mangochi, or Salima, where you can find a limited variety of groceries.
- Fresh food is also available in the market on a seasonal basis; this is limited during GHCE quarters.
- Three meals per day are included with room and board at Mua Mission. The food is based on seasonally availability. The cook for the MUA mission makes a combination of local and international cuisine.
- If you wish to make your own food: The closest western-style grocery store is located in Lilongwe, Mangochi, or Salima, where you can find a limited variety of groceries.
- Fresh fruit and vegetables can be found on Wednesday and Saturday at the local market

Sample Breakfast – porridge, toast w/ jam and peanut butter, corn flakes, bananas, coffee, tea

Sample Lunch/Dinner – Rice/Potatoes/nsima, Vegetables (seasonal → squash, greens, beans, salad, corn, tomatoes), Meat (pork, goat, beef, chicken, fish, or rabbit), Beans, Fresh Fruit (seasonal mango, papaya, banana, guava, passion fruit).

SAFETY

Information below adapted from U.S. State Department's website.

- Spontaneous civil disturbances have become more common in recent years. Avoid crowds, political rallies, and street demonstrations and maintain security awareness at all times.
- Even though Malawi is known as "the warm heart of Africa," crime is common in larger cities (Lilongwe, Blantyre, and Mzuzu). Rural areas are much safer. Most crimes against U.S. citizens involve property. Residential break-ins are prevalent throughout Malawi and perpetrators of these crimes are usually well-armed and may resort to violence with little provocation. Petty street crime (robbery and pick-pocketing) is common, and break-ins have also occurred in hotels/lodges throughout the country.
- U.S. citizens are urged to avoid traveling on foot at night, especially in urban areas, as armed muggings and assaults have increased, esp. in Lilongwe.
- While in Malawi, you are subject to all local laws. Always carry at least 5000 kwacha because this is the amount a police officer will fine you for any "offense". You may be able to talk your way out of these petty offenses (like a "dirty car"), but you will have to pay if they insist or else you will be arrested.
- Don't buy counterfeit and pirated goods, even if they are widely available. Bootlegs are illegal in the United States, and you may be breaking local law too.

HEALTH INFORMATION:

- Traveler's diarrhea is likely to occur. Use common-sense precautions regarding food and water, and have stand-by antibacterial treatment available.
- Malaria is endemic in Malawi, and can be rapidly fatal. Use antimalarial medications, DEET at night, and sleep under an insecticide-treated mosquito net.
- HIV and TB are common among hospitalized patients: take measures to protect yourself.
- Lake Malawi is full of schistosomiasis. It is recommended that you avoid swimming in the lake. If you do swim in Lake Malawi, be sure to tell your physician when you return home. You can get empiric therapy (praziquantel 20 mg/kg x 2 doses) at the Mua pharmacy (take 6 weeks after last exposure).
- Cash payment is often required before receiving medical treatment.

EXCURSIONS

MUA and vicinity:

- “Mua is basically a fairly small village that has grown around the Catholic Mission and associated Hospital and cultural center. There is not much to do but there are a couple highlights that are worthwhile. While around the hospital and mission, things are very safe, but I would probably not feel very comfortable exploring the surrounding villages alone. The only real danger is intoxicated men, who are definitely present, particularly on market days or holidays.”
- Kungoni Museum and Cultural Performance – “The museum is found in most of the guide books and most visitors say it is one of the best museums and art galleries in Malawi. The tour is easily arranged and you should take advantage of seeing a cultural performance if possible. If there aren't any performances, you will be welcome to watch (and participate) practices during the week.”
- Weekend Football Matches – There are two local traveling football teams and the games are very popular. The field is near the deaf school, just a short walk from the mission.
- Wednesday and Saturday Market – The market is located by the main road, down the hill from the mission. “They have pretty much everything that is essential for the everyday Malawian. There are vendors selling various food items, cloth, second hand and new clothes and shoes, and bike parts. There are also stands for traditional medicine which are interesting.”
- Bembeke – The hike to Bembeke and back has been recommended by a number of visitors, though it is fairly strenuous.
- Even if you're not religious, consider going to mass with the priests – especially in the village. Most Malawians are religious, and you may be interested to see how organized religion and traditional beliefs have blended. A great way to practice your Chichewa too.

Further Afield:

- Lake Malawi – There are numerous options; the most beautiful and lively is probably Cape Maclear, but this is the hardest to get to. From Mangochi, there are numerous places for beach access.
- Dedza Pottery – A trip to Dedza is worthwhile for two reasons. First the drive is extremely scenic. Second, Dedza pottery is a famous place for pottery and its restaurant (“get the cheesecake”). Nkhotakota pottery lodge is on lake Malawi, but gets the clay from Dedza. You can stay here for \$40/night, have great food, and makes pots in the shade on the beach (private lessons for \$2.40/hour...really affordable). Really worth the trip.
- Zomba Plateau – Catch a minibus to Balaka (800MK), then another to Zomba (800MK). At Zomba, you can either hike up the plateau (7-10 miles from the bus station, plus a lot of uphill) or take a taxi. Because I didn’t have a lot of time, I took a taxi up the plateau and paid 5000MK for a round trip fare (make sure you bargain hard). On the Plateau, you can stay at the Trout Farm’s rustic cabins or camp on their lovely grounds. Bring your own food; you can buy strawberries, gooseberries, and raspberries but little else. You can hike on the round to Williams Falls, Emperor’s View, and Queen’s View. I got a walking guide (2000MK) for four hours and enjoyed hearing the local tales about the area, but it’s certainly possible to hike around without employing a guide. On top of the Plateau, you’ll see lovely views of the Great Rift Valley, mountains, and Lake Chilwe. There’s a different biome atop the plateau, plus lots of pine plantations. It’s worth visiting the lovely KuChawa Inn and having a coffee or beer in their stellar gardens
- Senga Bay – An easy day or weekend trip from Mua. Take a minibus to Salima then catch a matola to Senga Bay (20km away) from Salima’s bus depot. You can spend the day at the Livingstonia Hotel, which has a very nice beach. If you want to spend the night, try further down the bay at Cool Runnings Hostel (which has superb but pricey food—try the fresh fish). Red Zebra and Wheelhouse are also rumored to be good. The croc farm and fish farm are probably not worth visiting.
- Cape Maclear – stunning scenery, but very touristy. Definitely caters to the backpacker/short-term volunteer crowd. Relatively inexpensive, full of expats, and has scuba/snorkeling available. To get there: take minibus or matola to Golomoti and then to Monkey Bay, then catch a matola (500MK) to Cape Maclear. Camp Malambe is a good, affordable place to stay. On the way back, ask at your hostel about the early morning AXA buses leaving from Monkey Bay that can drop you at Mua directly.

TIPS FROM PREVIOUS STUDENTS:

- Take your anti-malarials faithfully because there really is a lot of falciparum in Malawi.
- There is a lot of TB in the hospitals: take an ample supply of masks if you are going to be observing. That said, no one else will be wearing a mask, even in the isolation ward. A well-ventilated room is key!
- No one “rushes” here: in fact, a recent UK study found Malawi to have the slowest walkers of all nations looked at.
- Be positive and hardworking. You will see a lot of unnecessary suffering compared to back home, but you will also see how much good can come from simple IV fluids, antibiotics, or a few stitches.
- Very common first-line medications at Mua that you may be less familiar with: chloramphenicol, benzyl penicillin, pethidine (Demerol), paracetamol (acetaminophen), artesunate and quinine
- High yield review topics: laceration repair; abscess, pyomyositis, and skin infection treatment; inguinal hernia repair; c-section indications, post-op care, and procedure; HIV drug side effects; anemia. Bring a book about tropical infections—you will see many of them.
- Be careful about translations. Learn some Chichewa yourself, and be patient. You may have to ask a question several ways before you get the real answer.
- You will have to set your own goals, objectives, limits, and priorities. The supervision varies quite a bit, especially if the doctor is not there. Don’t be afraid to ask for help, but also don’t be afraid to jump in and get your feet wet. People don’t really understand what American medical students are capable of –you will be both over- and underestimated.
- You will be asked by patients, staff, and strangers for financial assistance. Don’t be offended and prepare yourself for this in advance. In general, don’t hand out money, but be compassionate and help others access resources that they don’t know exist (ie emailing a list of NGOs that offer scholarships, networking, and so on). The average working Malawian earns less than \$900 per year.
- Men and women are not treated as equals in Malawi. 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
- Consider buying these items in Lilongwe before you go to Mua: chocolate, cheese, batteries, shampoo, deodorant, etc. This might be the last chance. All of these places are within a couple blocks of Mufasa’s.
- Malawi gin is famous and a good gift to bring back, if you have room. The coffee from Mzuzu is also excellent.
- Bring some extra money to buy carvings with at Kungoni Museum—they have some amazing pieces.

CULTURAL ADJUSTMENT

- Look for a cultural broker, someone who has an 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. (Note: the priests at Mua are perfect “cultural brokers”)
- 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.
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	Interactions are formal, and it is important to

	used. Clothing choices reflect personal tastes and comfort. “Low context”	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.
Emotions	Logic, restraint and objectivity are valued, and displays of emotion are rare.	People are emotionally demonstrative. Subjective feelings and intuition are given credibility.
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 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. 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 leishmaniasis.

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. The exact number of pills will depend on where you are going. If you are in a country where we have identified someone who will be responsible for treating you in the event of an exposure, 1-2 days of medications may be enough. If you are in a remote area and would need to return to the U.S. to obtain treatment, then a 3-5 day supply may be prudent.

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. This would involve obtaining an additional supply of medications and arranging for follow-up evaluation and monitoring. In many cases, it may be best to return to the U.S. to ensure proper care.

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. falciparum*, 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

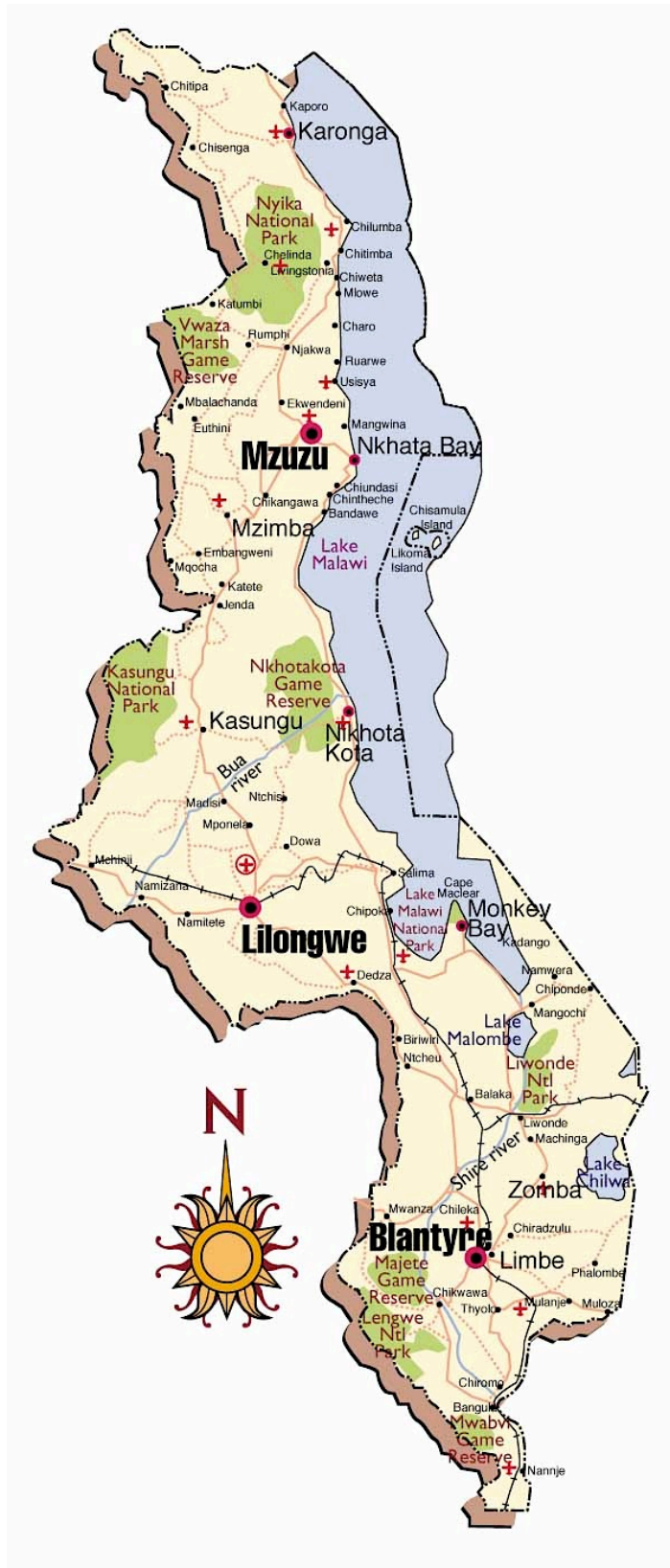
AND

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, and is on Catalyst and in your site guide.

MAP





CHICAGO JOURNALS



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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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.

Infect Control Hosp Epidemiol 2013;34(9):875-892

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 Post-exposure 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 2011¹³ and June 2012¹⁴ 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 non-intact skin (eg, exposed skin that is chapped, abraded, or af-

flicted 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. Fatal⁴⁸ and nonfatal⁴⁹ 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 meningocele 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 2002⁵⁹ 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 pro-

ocols 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, H₂-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. Re-evaluation 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 EIAs⁶⁰ 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 occupational¹²² 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 lopinavir plus RTV. When a more cost-efficient alternative to RAL is required, saquinavir 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 di-

danosine 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: registries@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 im-

proving 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 co-infected with HIV and HCV. Whether extended follow-up is indicated in other circumstances (eg, for exposure to a source coinfecting 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.

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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	
<i>(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}</i>	
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)	available as Combivir
Atazanavir (Reyataz; ATV) + ritonavir (Norvir; RTV)	Zidovudine (Retrovir; ZDV; AZT) + emtricitabine (Emtriva; FTC)
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 Stri-bild, 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-naïve 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 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 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
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 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
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.

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

