Mosquitoes and mosquito-borne risks: Whether you remain on campus, travel elsewhere in the metropolitan area, or visit other regions in the US or abroad, you are likely to encounter mosquitoes. Some of these mosquitoes may simply annoy you, but others may pose a distinct risk to health because they may transmit (vector) viruses or other organisms. Hence, it is wise to remain mindful of your risks and to pursue efforts to protect your health.

In Massachusetts, the main mosquito-related risks to people currently include West Nile virus and eastern equine encephalitis virus. Mosquitoes acquire either kind of virus by feeding upon a bird that is infected. The mosquito may then transmit the virus several days later as she bites again in search of blood. Risks are seasonal and dependent upon geographic location, the time of day, the weather, and your activities.

**West Nile virus (WNv)** is transmitted mainly by a mosquito that thrives in organically fouled water in sites such as street catch basins that are ubiquitous in urban and suburban communities. These basins are treated with an environmentally-appropriate biological larvicide by the mosquito control districts serving Boston and Cambridge, and by licensed personnel and vendors serving the Harvard campuses. This effort reduces the abundance of these mosquitoes, but you can pursue actions to further reduce your risks. Risk of West Nile transmission tends to be greatest as the summer progresses. Whereas West Nile virus infection may sometimes result in serious disease or death, most infections tend to be fairly mild and self-limiting. Vaccines or specific treatments for people are not currently available.

**Eastern equine encephalitis virus (EEEv)** can be transmitted by any of several other kinds of mosquitoes that occur mainly in or near cedar swamps and other wetland habitats throughout rural areas of New England and along the Atlantic seaboard. Because these habitats are difficult to treat, interventions tend to rely upon the application of mists of mosquito adulticides delivered by trucks or aircraft. Risks from EEEv within Boston and Cambridge are historically tiny, but travels to outlying communities in surrounding counties may increase risk of exposure. EEEv infection frequently results in profound and life-altering illness as well as death. Vaccines or specific treatments for people are not currently available.

Diverse other mosquito-borne infections may be encountered when one travels elsewhere in the US and abroad. On occasion, certain of these infections may be brought back in returning travelers. Examples of such infections include the viruses such as those that cause **Dengue** and **Chikungunya** (both currently sweeping through the Caribbean region),
and blood parasites such as those that cause **malaria** and **filariasis**. Whether on campus or elsewhere, there are steps you can take to reduce your mosquito-associated risks.

**Personal protection**

**Avoidance:** If you’re outside and encounter mosquitoes, consider retiring to the indoor environment.

**Attire:** Most kinds of mosquitoes won’t bite through clothing. Cover up exposed skin to reduce opportunities for mosquitoes to bite.

**Repellents:** Several kinds of EPA-approved insect repellents are available for use on skin and clothing. They can dramatically (though transiently) reduce the level of annoyance and risk from mosquitoes. Read and follow label instructions.

**Environmental management**

**Source reduction:** Many kinds of mosquitoes will exploit small collections of water in containers such as buckets, trash barrels, cans, tarps, and disused tire casings. Indoors, some mosquitoes will develop in water contained within water jugs and dishes under plant vases. Because a mosquito may mature in less than one week in warm conditions, empty, cover or screen water-holding containers. If you see containers or puddles that retain water for a week or more, contact EH&S or your building manager.

**Exclusion:** Screened windows and doors effectively keep most mosquitoes outdoors. Repair and install screens, as permitted and appropriate. The draft produced by fans can reduce human-mosquito contact. When traveling abroad or camping locally, sleep more safely and comfortably by protecting yourself with bed nets or screened tents. Long-lasting insecticide-treated nets that are in good condition and used appropriately can significantly protect your health while you are abroad. These are often available locally, or you may purchase and pack them for your trip.

**Larviciding:** Licensed pesticide applicators distribute environmentally appropriate larvicides to designated sites on Harvard properties. Homeowners may contract for such services or apply these products on their own properties, but not elsewhere.

**Adulticiding:** Regional mosquito control agencies may apply mists of adulticides in some communities to reduce the abundance of mosquitoes on the wing. This can also reduce risks of mosquito-borne infection.

**Anti-malarials:** Contact University Health Services (UHS) or your own clinician long before you travel abroad for guidance on medications you should consider to protect yourself against malaria and diverse other health concerns.
Resources and links for more information

Massachusetts Dept. of Public Health
www.mass.gov/dph/mosquito

US Centers for Disease Control and Prevention
Mosquitoes
http://www.cdc.gov/features/stopmosquitoes/

Travel guidance

EPA: Insect repellents
http://www.epa.gov/pesticides/insect/choose.htm

Boston Public Health Commission

Cambridge Public Health
http://www.cambridgepublichealth.org/services/environmental-health/mosquito-borne-diseases/

Harvard University Health Services Travel Information
http://huhs.harvard.edu/HealthInformationAndResources/HealthInformationForTravelers.aspx