Emerging mosquito-borne diseases
An introduction to Chikungunya, Dengue, and Zika

Fig 1. The Asian tiger mosquito is a potential carrier of all three diseases.
Photo credit: James Gathany, CDC (Public Domain)

Overview
Chikungunya, Dengue and Zika are viruses spread by mosquitoes. All three are of African origin but have spread to South America. There is potential for them to reach Pennsylvania, but the primary concern now is protection while travelling—remember to use repellents!

All three viruses cause fever, joint pain and rashes, but may have other symptoms as well.

There are no vaccines or specific treatments for these viruses. Supportive treatments (like bed rest, staying hydrated and acetaminophen) are suggested by the CDC.

Chikungunya (or ChikV)—additional symptoms may include swollen joints. Chikungunya is very painful but is rarely fatal.

Chikungunya has been transmitted in the United States, but is limited to Florida on the mainland.

Dengue—can present as Dengue fever or the more dangerous Dengue Hemorrhagic Fever (DHF), where symptoms will including bleeding and easily bruised skin.

Dengue has the highest mortality rate of these three diseases.

Zika (or ZikV) - additional symptoms include conjunctivitis (blood-shot eyes) in humans. Zika is the most recently imported of these viruses. It was first seen in May of 2015 in Brazil. It is rarely, if ever, fatal. No deaths have been reported.

More dangerous is the possible link to microcephaly (mike-row-SEF-alee)—a birth defect in which the child’s head is abnormally small, which can be fatal. Growing evidence shows that if a woman is infected she may be able to pass the virus to an unborn child, causing microcephaly, so women who are pregnant or may become pregnant are urged to take extra precautions.

Prevention
There is no treatment or vaccine for Chikungunya, Dengue or Zika for humans. For mosquito-borne disease, an “ounce of prevention” is worth more than a pound of cure—it’s priceless.

Prevention Strategies

- Empty containers of standing water.
  - Mosquitoes breed in standing water, so eliminate it where possible. Remember that a carelessly discarded fast food container, which will hold no mosquito predators, is more hazardous than a healthy wetland full of mosquito-eating organisms.

- Wear light colors and long, loose sleeves and pants.
  - Mosquitoes are less attracted to light colors, and long loose sleeves and pants will keep their hungry beaks away from your skin. There are mosquitoes who feed on thick-skinned alligators, so don’t expect a thin cotton shirt to dissuade them.

- Use bug repellents
  - DEET or Permethrin products work best, but be sure to follow label instructions carefully to avoid injury.

- Keep windows screened
  - Window screens keep mosquitoes from snacking on you in your sleep during the summer months when you’re enjoying that evening breeze. In fact, screens are a major contributor to the fact that malaria is now so rare in the US.

- Remember that mosquitoes may feed during the day
  - While most mosquitoes feed at night, some of those which may spread these diseases (including the Asian tiger) feed during the day.

- If you have recently been to a country where Zika is present and are showing symptoms, talk to your doctor immediately.
  - Only a blood test can confirm a case of a case of Chikungunya, Dengue or Zika, and it’s important to know what you’re up against when you’re sick.

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For more information vector borne diseases visit www.cdc.gov or www.who.int/en/

Tire Piles—first try your local government for large tire piles, DEP at 1(800)346-1932

Personal health—Dept of Health 1(800)PAHEALTH or 272-2044

Mosquito questions and concerns—Contact:
Tom Smith
York County West Nile Virus Program Administrator
Penn State Extension—York County
112 Pleasant Acres Road
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Geographical Distribution

Mosquitoes spend the first part of their lives in any sort of still water that lacks predators such as fish. In hot weather it takes about a week for the larvae mature and the adult to emerge, so get rid of the water or dump it out weekly.

Mosquito control tips:
- Store containers upside-down
- Change water in unfiltered pools weekly
- Properly dispose of or drill holes in tires
- Keep gutters clean

Immature mosquitoes are found near the surface of the water as “wiggles” and “tumblers”

Adult mosquitoes have a needle-like mouth and are about the size of a fingernail