



# Twelve Eighty-Two

*Fall Issue: Volume 4 Issue 3*

*The Public Health Preparedness Community  
Newsletter from the Bucks County  
Department Of Health*



## Inside This Issue

- ◇ What We're Up To
- ◇ Coming Soon: The Vaccine Patch
- ◇ Upcoming Training Offerings
- ◇ Why You Can Get Malaria From Mosquitoes & Why You Won't Get HIV
- ◇ Hurricane Kappa Gamma? How Tropical Cyclones Get Their Names
- ◇ Out Loud: Public Health Podcasts to Stimulate Your Day
- ◇ Organization Spotlight: Emergency Management At All Levels

### **Bucks County Commissioners**

**Charles H. Martin,  
Chairman**

**Robert G. Loughery,  
Vice-Chairman**

**Diane M. Ellis-Marseglia, LCSW**

# What We're Up To

## ◆ **Fall Flu Clinics**

Under the sponsorship and full support of the County Commissioners, the Bucks County Health Department will be providing flu shots again this year to Bucks County residents free of charge. Each year the Public Health Preparedness program collaborates with other Health Department Programs to provide vaccinations while at the same time testing components of our emergency medical countermeasure dispensing procedures. For the first time this year we will be testing procedures and tools for responding to medical complications as well as tools for assisting and accommodating access functional populations. Clinics will be held at our Doylestown office on the 23rd of September and at our Quakertown and Levittown offices on the 30th of September. See pg. 7 for more information including the hours and location addresses, and read pg. 2 to find out about potential major changes to the way you may get your vaccines in the future.

## ◆ **PHP at the Governor's Summit**

The PHP program will be presenting its work on a Community Vulnerability Assessment at Pennsylvania Governor's Emergency Preparedness Summit this October in Hershey. The Community Vulnerability Assessment was created to help the PHP program better understand how different areas of our county may be disproportionately impacted by emergencies, and subsequently allow us to make strategic planning decisions to reduce vulnerabilities.

## ◆ **Project Public Health Ready**

This August, the PHP program submitted its re-certification for Project Public Health Ready (PPHR). PPHR is a criteria-based training and recognition program that assesses local health department capacity and capability to plan for, respond to, and recover from public health emergencies. PPHR aims to protect the public's health and strengthen the public health infrastructure by equipping local health departments with sustainable tools to plan, train, and exercise using a continuous quality improvement model. The Bucks County Health Department was first certified in 2012.

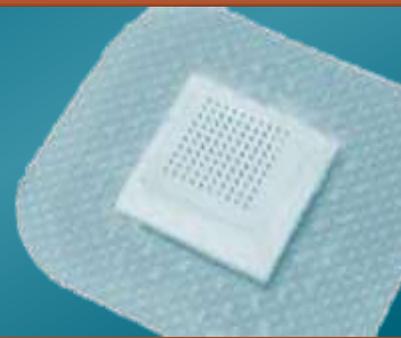
## ◆ **Preparedness Education at Local Expos**

Over the next couple months the Preparedness Program will be providing preparedness education at several expos across the county. Keep an eye out for Fallon Maggio and our MRC Volunteers at the expo near you.

## ◆ **Suzanne Redington, Doctor Awesome Boss**

We are super excited to announce that the PHP Program Coordinator is now Dr. Suzanne Redington after she successfully defended her dissertation earlier this month. A well deserved congratulations to Suzy on her huge accomplishment, and our continued gratitude.

# Coming Soon: The Vaccine Patch



Major changes may be coming to how you get the flu vaccine in the coming years. The recent success of a human trial utilizing a “microneedle” patch may potentially signal the end of receiving vaccinations from a hypodermic needle. Instead, we may be receiving vaccinations from a patch that is applied to the skin for approximately twenty minutes. These patches are covered with micro needles (needles that are scarcely longer than the width of a human hair) which are comprised of dried vaccine. Because the vaccine is in a dried form, it is much more resilient and is able to be stored for up to a year at a temperature reaching 100 degrees Fahrenheit. This is in contrast to the current influenza vaccine which requires continual refrigeration. Additionally, as found in this first human trial, it was demonstrated that the vaccine patch could potentially be self-administered with little instruction.

Workers in the public health preparedness field excitedly welcome this news, as it has the potential to resolve some of the following challenges:

**Administration**- Possibly the greatest advantage of the microneedle patch is the extent that it could dramatically reduce the staffing required to distribute and/or administer the vaccine during an emergency. This is particularly significant in the potential reduction of licensed medical personnel needed to mount a response. Unlike vaccines given through hypodermic needles, the microneedle patch will likely not require a trained medical professional for its administration. Additionally, the possibility for the vaccine to be self-administered may allow for a “head of household” distribution method. Under this method, only one individual from a family or “household” is needed to retrieve medication from a distribution site (point of dispensing). This, in turn, greatly reduces the number of individuals who need to go through a distribution site. This further results in a hastened response, with more vaccines reaching more individuals in a shorter period.



*Image Credit: Georgia Tech*

**Cold chain management**- As mentioned, the microneedle patches have a high temperature tolerance. This means that there is little or no required refrigeration. No longer requiring refrigeration readily reduces challenges in shipping and storing the vaccine, allowing for much greater flexibility in where and how the vaccine is distributed.

**Vaccine transportation**- A likely reduction in the size of the vaccine and its packaging may reduce the corresponding size and/or number of vehicles required to transport the vaccine. Reduced size and weight of the vaccine will also result in fewer people needed to load and unload the vaccine as it makes its way to distribution sites.

For now, the microneedle patch is still being tested for safety and effectiveness. Until the safety and effectiveness is conclusively demonstrated, we will all have to bear the trifling pain, and for some the crippling anxiety, of the hypodermic needle. But at least you can get the flu vaccine for free from us. Come see us at one of our three influenza clinics to get your free flu vaccine. See [pg. 7](#) to find a clinic near you!

# Upcoming Training Offerings

October 18th	6:30 pm to 8:30 pm	Points of Dispensing Introduction	Open to all community members
November 4th	9:00 am to 12:00 pm	Reaching Across Barriers – An Interactive Workshop on Creative Community Engagement	Open to all community members
November 8th	6:30 pm to 8:30 pm	Points of Dispensing Management *prerequisite : POD Introduction	Open to all community members
November 28th	6:30 pm to 8:30 pm	Psychological First Aid	Open to all community members
December 2nd	9:00 am to 12:00 pm	MRC Refresher & Epidemiology for Volunteers	Open to all community members

All trainings held at  
1282 Almshouse Rd. Doylestown, PA 18901

These trainings are presented as part of the Medical Reserve Corps ongoing training series. To learn more about the Medical Reserve Corps or to join the MRC follow this link:  
<http://www.buckscounty.org/medicalreservecorps> or contact the MRC at [hdbcmrc@buckscounty.org](mailto:hdbcmrc@buckscounty.org)

## Why You Can Get Malaria From Mosquitoes And Why You Won't Get HIV

Humans are impacted by thousands of infectious diseases that are spread by a wide assortment of creatures. We know that we can get rabies from infected mammals, and Lyme disease from ticks. Yet, in some cases an infectious disease can only be transmitted from person to person. To help understand why diseases are only spread in certain ways we can look at two diseases, HIV and Malaria, and one creature, the mosquito, to explore the complex factors that impact transmission of any infectious disease. The ability of mosquitoes or any other organism that spreads disease (known as vectors) is dependent on the relationships between the vector, the disease, people, and the environment. Looking at this relationship can tell us why mosquitoes can spread Malaria and why they cannot spread HIV.

### Why mosquitoes can spread malaria

Underlying all of the factors leading to the transmission of disease by mosquitoes is biology. The biology of mosquitoes require that the female take a blood meal in order to produce eggs (mosquitoes do not feed on humans for sustenance and thus only female mosquitoes bite). This fact alone reduces the number of mosquitoes that potentially spread malaria, or any other diseases, by roughly half. It is not just the male mosquitoes who do not bite humans- only a certain proportion of all mosquito species actually bite humans. Female mosquitoes have distinct feeding patterns with some feeding primarily on animals (zoophily) while others prefer to feed almost exclusively on humans (anthropophily). Mosquitoes who feed primarily on humans are the most competent vectors of malaria. Another biological factor leading to malaria transmission is the immune response of certain mosquito species. The malaria parasite does not survive equally well in all mosquitoes, and in some species, the malaria parasite does not develop at all.

The lifespan of the mosquito further affects their ability to spread malaria. The female mosquito must survive long enough for the malaria parasite to develop to a point that it can be spread to humans, a period of typically between 8 and 14 days. Best estimates of mosquito survival time indicate that only about ten percent of mosquitoes will survive long enough to transmit malaria. Environmental factors, namely temperature, play a critical role in both the development of the malaria parasite and mosquitoes. Modeling has indicated that the rate of malaria parasite development increases with a corresponding increase in temperature, up to a temperature between 89.6-104°F. At this point the temperature becomes lethal to the parasite. The relationship between the development of mosquitoes and temperature is much more complex and is still subject to ongoing research, but ideal conditions for malaria transmission are predicted to fall between 68 -86°F with temperatures below 64.4°F being too cold for malaria transmission.

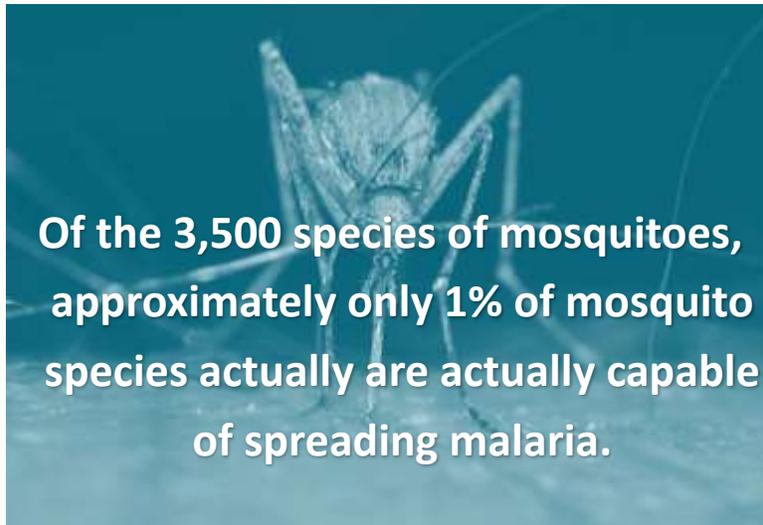
Even under all of these constraints there were still over 200 million cases of malaria globally in 2015, resulting in over 400,000 deaths. However, this extremely prolific infectious disease only results in about half the deaths that HIV causes globally each year. Yet there is a positive: unlike malaria, HIV is not spread by mosquitoes.

### **Why Mosquitoes Cannot Spread HIV**

Why mosquitoes cannot spread HIV all comes down to the biological interaction between the virus, mosquitoes, and human (no need to consider the environment this time). One only has to consider the biology of mosquitoes to understand why they cannot transmit HIV.

Superficially, it would seem that mosquitoes should be able to spread HIV. As was detailed, mosquitoes are able to spread

malaria, among numerous other diseases. Yet, mosquitoes are not flying hypodermic needles. Far from injecting blood from one person to the next, they do not even use the same mouthparts to puncture the skin and suck blood. Mosquitoes actually have four mouthparts, two of which are used to puncture the skin, one that injects saliva into the host (humans and other animals), and one that is used to draw blood. For malaria, a mosquito first ingests the blood of an infected person. The malaria parasite then makes its way from the mosquito's stomach into its salivary glands before



being transferred to the next human (in total the malaria parasite goes through 12 life cycles between the mosquito and human host).

However, this process is not possible for HIV as the virus is destroyed by the mosquito's digestive system upon consumption.

Additionally, mosquitoes lack the biological

mechanisms (specifically CD4 Cells) that HIV relies on to replicate. Thus, even if HIV were able to escape from the mosquito's digestive tract, it would still not be viable within the mosquito. These factors hold true for all blood-sucking arthropods, not just mosquitoes. So you are also not going to get HIV from a tick.

Yet, what about blood remaining on the mosquito's mouthparts after its last blood meal? HIV can remain infectious outside of the body for extended periods. Fortunately, the volume of blood that mosquitoes ingest is quite small. The relatively small levels of HIV in human blood along with the small amount of blood taken by a mosquito results in a less than a 1 in 10 million chance that HIV could be spread through this method. Furthermore, this scenario assumes that the mosquito bites two individuals in relatively quick succession. In practical terms, transmission through this route is calculated to be essentially a zero probability. And thus, with a very high degree of certainty, we know that you cannot get HIV from a mosquito or any other insect.

## Hurricane Kappa Gamma?: How Tropical Storms Get Their Names

Imagine you are living on the Southern Coast of Florida in late August of 1935. Over the last few days you have been listening to news reports of a hurricane steadily moving in your direction. Finally, you hear some welcome news on the radio that the storm, being referred to as “hurricane 3” has shifted north west, losing intensity as it moves away from Florida. What you don’t know is that the radio station had inadvertently mixed up the forecasted path for hurricane 3 with the report of the remnants of an earlier storm, a tropical depression, which happened to be the third storm of the season. This accidental mix up of storms took away precious time for you to prepare for what would become the most intense hurricane up to that date in history.

The early system for tracking hurricanes based on year and order in which they occurred often led to confusion and false rumors. It was not uncommon for radio station’s to give storm advisories that were confused with warnings for entirely different storms that were often times hundreds of miles away. The practice of using short, easily remembered names was found to be quicker and significantly reduce confusion. This led to the United States adopting a system of using female names, typically the names of the forecasters’ significant others, to identify storms in 1953. By 1978, both male and female names were used to identify Northern Pacific storms, which was subsequently adopted the following year for storms in the Atlantic basin.

The procedure for naming storms is now coordinated by the World Meteorological Association. This association oversees six lists of male and female names that are used in rotation. Thus, the 2015 list will be used again in 2021. Each region of the world has its own list of names that reflect names common to that region. Changes to a list only occur if a storm is so deadly or costly that the future use of its name on a different storm would be inappropriate for reasons of sensitivity (out of respect for the lost lives and property). When this occurs, the name of the offending storm is stricken from the list and another name is selected to replace it. Examples of this include infamous storm names such as Haiyan (Philippines, 2013), Sandy (USA, 2012), and Katrina (USA, 2005). In the event that more than twenty-one named tropical cyclones occur in a season, any additional storms will take names from the Greek alphabet.

### What’s the difference?

*Hurricanes, cyclones, and typhoons are all the same thing. The only difference is the location of the storm.*

**Hurricane**- Atlantic and Northeast Pacific

**Cyclone** –South Pacific and Indian Ocean

**Typhon**– Northwest Pacific

## Out Loud: Public Health Podcasts to Stimulate Your Day



### How Our Perceptions of Risk - and Killer Snails! - Affect Our Health

Sharks may be one of the scariest animals, but sharks are 1,000 times less deadly than a certain fresh water snail. This episode of Signal explores the shark and the snail of medicine. How do our perceptions of risk, and our out-sized — or undersized — fears affect our health?

<https://www.statnews.com/2016/04/18/signal-podcast-episode-9/>



### Rajneeshpuram

In the early 80’s, Indian philosopher Bhagwan Shree Rajneesh endeavored to create a utopia in rural Oregon. The dream of utopia would eventually crumble as political tensions rose, leading to the largest incident of bioterrorism on modern US soil. Explore the rise and fall of the utopian dream in this episode of 99% Invisible.

<http://99percentinvisible.org/episode/rajneeshpuram/>



### This is an Activation

Join Every Little Thing in their exploration of a weird night in Dallas leading them to ask: what kind of emergency systems are all around us?

<https://gimletmedia.com/episode/this-is-an-activation/>



### Evolutionary Arms Race

In this episode of Origin Stories, Dr. Pardis Sabeti takes a closer look at the evolutionary arms race between humans and the microbes that make us sick. What does each side bring to the fight?

<https://soundcloud.com/origin-stories/episode-13-evolutionary-arms>

# Organization Spotlight :

## Emergency Management At All Levels

### Emergency Management

Throughout the United States, emergency management agencies (EMAs) play a significant role in a disaster response. But what do they really do? EMAs are active before, during, and after a disaster. Even before a disaster strikes, emergency management staff are working to decrease the potential impact from hazards by writing and testing response plans, providing education and training, maintaining supplies and other resources, establishing collaborative relationships, and implementing hazard mitigation measures. During a disaster, emergency management personnel help to manage the disaster's immediate effects by coordinating the activities of response groups, obtaining needed supplies and other resources, and communicating with the public and elected officials. After a disaster, these personnel assist with coordinating response groups and obtaining resources to restore services and repair infrastructure, providing for the health and safety of the community, and returning the community to its new normal state.

### Level 1: Local Emergency Management

In the Commonwealth of Pennsylvania, every political subdivision (e.g. state, county, city, borough, township) is required to have an emergency management program. This program includes an Emergency Management Coordinator, a plan for how to respond to emergencies, and trained staff to implement that emergency operations plan. This means that, at the most local level, every township and borough in Bucks County has an Emergency Management Coordinator, a response plan, and identified staff to help during an emergency response. Some jurisdictions hire an emergency manager, others are volunteers, and for others, this may fall under 'other duties as assigned.' The local emergency manager is responsible for coordinating the emergency response within their jurisdiction as well as asking for assistance when the response activities exceed their capabilities.

### Level 2: Bucks County Emergency Management Agency

When a local emergency manager requests assistance for an emergency response, that request goes to the next level of government. In Bucks County, that request is received by the Bucks County Emergency Management Agency. The personnel of this agency are responsible for coordinating the county-level response to a disaster, supporting local jurisdictions who request assistance, and responding to incidents, such as hazardous material spills, which require specific resources and personnel that are managed by the County. For example, should there be a pandemic influenza, the Bucks County Department of Health would serve as the lead agency for the public health response to the pandemic influenza. The Bucks County Emergency Management Agency would support the response by coordinating with other response groups, such as hospitals, emergency medical services, schools, police, and public works. They would also obtain any additional resources needed to support response activities and coordinate with other jurisdictions, including the state's emergency management agency (PEMA). They are also responsible for supporting emergency response activities in jurisdictions outside of the county as appropriate.

### Levels 3 & 4: Pennsylvania Emergency Management Agency and Federal Emergency Management Agency

When the response activities exceed the capacity of the county government, requests for assistance go to the Pennsylvania Emergency Management Agency (PEMA) and finally, to the Federal Emergency Management Agency (FEMA), should the needs exceed the capabilities of the state's resources. PEMA is responsible for supporting all county and city jurisdictions within the Commonwealth and FEMA is responsible for supporting all states and territories within the United States. Each agency has their own resources and agreements with businesses and organizations to help address the needs of an emergency response.



# You can get yours for free from the Bucks County Department of Health

Doylestown

Sept. 23, 2017

9am - 3pm

1282 Almshouse Rd

Doylestown, PA

215-345-3318

Levittown

Sept. 30, 2017

9am - 3pm

7321 New Falls Rd

Levittown, PA

267-580-3510

Quakertown

Sept. 30, 2017

9am - 1pm

261 California Rd

Quakertown, PA

215-529-7000

\*Flu shots are available at these locations for individuals over the age of three.

No appointment required.

For questions or to update your contact information, please contact:

Drew Dycus, MPH, MA  
ddycus@buckscounty.org  
Phone: 215-345-3832

Suzanne Redington, DrPH, MPH, CPH  
scredington@buckscounty.org  
Phone: 215-345-3321

Fallon Maggio, BS  
fpmaggio@buckscounty.org  
Phone: 215-345-3325

# Public Health

Prevent. Promote. Protect.



[www.facebook.com/buckshealthdept/](http://www.facebook.com/buckshealthdept/)



<https://twitter.com/buckshealthdept>

