

Zoonotic Disease

A Zoonotic Disease Summary for Public Health Personnel in the United States Army

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Executive Summary

Human Disease

- In quarter 4 of 2013 (1 October - 31 December), zoonotic diseases comprised 5.5% (21/383) of all Reportable Medical Events (RMEs) excluding sexually transmitted infections (STI). Among US Army Active Duty Service Members (AD SMs), zoonotic disease reports comprised 4.9% (6/122) of all non-STI RMEs. In the non-Army AD population (including family members, retirees, and AD SMs from other Service Branches who obtained care at Army facilities), zoonotic disease reports represent 5.7% (15/261) of all non-STI RMEs.
- Borreliosis, which includes Lyme disease, continued to be the most frequently reported zoonotic RME in the Disease Reporting System-internet (DRSi); borreliosis was also the most commonly coded zoonotic diagnosis in medical record and health insurance claims data reviewed using the Military Health System Management Analysis and Reporting Tool (M2).

Animal Disease

- 29 states had publicly available data on reported animal rabies cases for part or all of CY2013. From these states, 3,719 animal samples tested positive for rabies. Raccoons were the most frequently detected infected animals, accounting for 38.8% of all cases. Bats and skunks were the next most common; each type of animal made up about 22% of cases, respectively. Other infected animals included foxes, cats, dogs and other mammals.
- In the fourth quarter, 171 rabies events were reported to the Food and Agriculture Organization's (FAO) Emergency Prevention System database (EMPRES-i). Rabies continues to be a significant issue in Peruvian livestock and Taiwan's wild ferret badger population.
- A total of 10 animal specimens were submitted to PHCR-Europe for rabies testing. One cat specimen from Afghanistan tested indeterminate, a result which is treated as a positive. 9 samples were submitted from Continental United States (CONUS) Army installations; of these, one bat sample from Joint Base San Antonio (JBSA) Fort Sam Houston was positive for rabies.
- During the fourth quarter, influenza A activity continued in domestic poultry flocks in Asia. Five countries reported cases of A(H5N1) in ducks, chickens or other unspecified birds. A(H7N9) was reported from poultry flocks and markets in China, including one event from Hong Kong Special Administrative Region.

Vector Surveillance

- From 1 October to 31 December, 76 ticks were removed from human patients and submitted to the Department of Defense (DoD) Tick Test Kit Program at the Army Institutes of Public Health (AIPH) from CONUS Army installations. 62 of these were *Ixodes scapularis*, 11 (18%) of which tested positive for *Borrelia burgdorferi*, the causative agent of Lyme disease. 14 *Amblyomma americanum* ticks were submitted; none of these ticks tested positive for human pathogens.
- PHCR-North tested 3 *I. scapularis* ticks collected from veterinary patients and 44 collected from the environment in Fort Drum, NY. No ticks tested positive for any human pathogen.
- A total of 207 mosquito pools from CONUS Army installations were tested for West Nile Virus (WNV); 206 pools were *Culex* spp. and 1, from PHCR-North, was *Aedes* spp. In PHCR-North, 4 of 30 (13%) pools tested positive for WNV. 5 of 123 (4%) mosquito pools in PHCR-South tested positive. In PHCR-West, 1 of 54 (2%) mosquito pools was positive.
- PHCR-Europe received 3,000 mosquitoes from Djibouti. All mosquitoes were identified; none were vectors for human disease pathogens.
- During the 2013 WNV surveillance season, a total of 1,919 mosquito pools from CONUS Army installations were tested. PHCR-North reported a higher mid-season Minimum Infection Rate (MIR) in 2013 than in 2012.

Human Disease Summary: Reportable Medical Events

Zoonotic Diseases Reported in DRSi from Army Installations and in Soldiers and Other Beneficiaries at Navy Installations, 1 October to 31 December

Installation	Leptospirosis		Lyme Disease	
	Active Duty	Other Beneficiaries	Active Duty	Other Beneficiaries
PHCR-Europe				
Katterbach, Germany			1	
Landstuhl, Germany			1	
Wiesbaden, Germany			1	
Region Total			3	
PHCR-North				
Aberdeen Proving Ground, MD				2
FHC Fairfax, VA				1
Ft Belvoir, VA				2
Ft Meade, MD			1	
NHC New England, RI				1
West Point, NY				4
Region Total			1	10
PHCR-Pacific				
Tripler, HI	2	1		1
Region Total	2	1		1
PHCR-South				
Ft Campbell, KY				1
Region Total				1
PHCR-West				
Ft Riley, KS			1	
Ft Wainwright, AK				1
Region Total			1	1
Command Total	2	1	5	13

- Excluding STIs, 383 RME records with date of diagnosis from 1 October through 31 December 2013 were entered into DRSi. Of these, 21 (5.5%) were for zoonotic diseases, 7 in AD SMs (6 Army, 1 Marine Corps) and 14 in non-AD beneficiaries. In comparison, during the same time period in 2012, 48 RME records for zoonotic diseases were entered into DRSi; 23 were AD SMs (22 Army, 1 Air Force) and 25 were non-AD beneficiaries.
- Borreliosis (including Lyme disease) was reported for 18 cases (5 Army AD, 13 non-AD beneficiaries) in quarter 4 of 2013: 11 cases from PHCR-North, 3 from PHCR-Europe, 2 from PHCR-West, and 1 each from PHCRs Pacific and West. In quarter 4 of 2012, 29 cases (9 Army AD, 20 non-AD beneficiaries) of borreliosis were reported from every PHCR except for PHCR-Pacific (18 from PHCR-North, 9 from PHCR-Europe, and 1 each from PHCRs South and West).
- Of the 3 reported leptospirosis cases, two were AD SMs (1 Army, 1 Marine Corps); the Army AD SM reported duty-related exposure while the other two cases reported exposure during leisure activities. All leptospirosis cases were reported from PHCR-Pacific.

Human Disease Summary: US Army Soldiers and Non-AD Beneficiaries

Zoonotic Disease Cases Identified from Soldier and Other Beneficiary Medical Visit Data in M2, 1 October to 31 December

Installation	Borreliosis		Ehrlichiosis (E. ewingii)		Cutaneous Leishmaniasis		Leptospirosis		Q Fever		Rickettsiosis (R. parkeri)		West Nile		Tick-borne Encephalitis		Rocky Mountain Spotted Fever		
	AD	BEN	AD	BEN	AD	BEN	AD	BEN	AD	BEN	AD	BEN	AD	BEN	AD	BEN	AD	BEN	
PHCR-Europe																			
Landstuhl, Germany	5	6																	
Vicenza, Italy																			
Region Total	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PHCR-North																			
Ft Belvoir, VA																			
Ft Knox, KY		2																1	
Ft Bragg, NC		17															1	4	
West Point, NY	2	31	1	1	1														
Region Total	2	50	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	5	
PHCR-South																			
Ft Campbell, KY	4	8		1				1			1							2	
Ft Hood, TX		3						1											
Ft Gordon, GA		2																	
Ft Benning, GA	1	5																	
Ft Polk, LA		1																	
Ft Sill, OK	1												1					1	
JB San Antonio, TX	2	8	1		1			1	1							1			
Ft Stewart, GA		5																	
Ft Jackson, SC	1	6																	
Region Total	9	38	1	1	1	0	0	3	1	0	1	0	0	1	0	1	0	3	
PHCR-West																			
Ft Wainwright, AK	2	1																	
Ft Carson, CO		2																	
Ft Riley, KS	1	1		1														1	
JB Lewis McChord, WA	3	1															1		
Ft Bliss, TX		2						1	1										
Ft Leonard Wood, MO		1																1	
Region Total	6	8	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	2
PHCR-Pacific																			
Ft Shafter, HI	1		1		1			2	2	1									
Region Total	1	0	1	0	1	0	2	2	1	0	0	0	0	0	0	0	0	0	
Command Total	23	102	3	3	3	0	3	6	2	0	1	0	0	1	0	1	2	10	

- In- and outpatient records from MTFs available in M2 were reviewed for zoonotic disease diagnoses at Army MTFs in the PHC regions. Verification of diagnoses was not possible due to lack of access to full medical records. Cases listed in this section may not meet RME reporting guidelines or may represent follow-up visits for earlier diagnoses, leading to higher case counts.
- From 1 October to 31 December 2013, 160 medical encounters with zoonotic disease diagnoses were identified in M2. Similar to previous quarters in 2013, most encounters were identified among purchased care outpatient records and direct care outpatient records (CAPER). 35 (22%) medical encounters were associated with AD SM visits.
- Borreliosis (including Lyme disease) was the most common zoonosis diagnosed for quarter 4 (78%) and overall in 2013 (82%). Rocky Mountain Spotted Fever was the second most common zoonosis identified this quarter (8%), followed by leptospirosis (6%).

Human Disease Summary: Notable Medical Events

Cases of Middle East Respiratory Syndrome-Coronavirus as Estimated by AFHSC, 1 October to 31 December 2013

- From April 2012 to November 2013 (the latest available report in 2013), [WHO](#) reported 157 laboratory-confirmed cases of Middle East Respiratory Syndrome-Coronavirus (MERS-CoV) and 19 probable cases.
- An estimated total of 37 cases from 6 countries occurred in the 4th quarter of 2013. 43.2% (16) of these cases resulted in death.
- The Kingdom of Saudi Arabia (KSA) reported the most cases, accounting for 62.2% (23) of cases and half (8) of all deaths.

Country	October		November		December	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
KSA	7	3	6	2	10	3
Qatar	3	1	1	1	0	0
Oman	2	2	0	0	1	1
Kuwait	1	0	1	0	0	0
UAE	0	0	3	1	1	1
Jordan	0	0	0	0	1	1
Total	13	6	11	4	13	6

Some dates of onset are estimates based on CDC, WHO and individual ministries of health.

Avian-Associated Human Flu Cases Reported to WHO, 1 October to 31 December 2013

Country	Influenza Serotype	# of Cases
China	H7N9	18
Cambodia	H5N1	6
Indonesia	H5N1	1

- From 2003 to December 2013, [WHO](#) has reported a total of 648 cases of human influenza A(H5N1). Cases have been reported from 15 countries, and 59% (384) resulted in death. 6 of the 7 A(H5N1) cases reported in quarter 4 were from Cambodia and 1 was from Indonesia.
- Influenza A(H7N9) cases increased in the fourth quarter of 2013. 18 cases were reported in this period, most of them occurring in December. A more detailed description of A(H7N9) can be found on [page 11](#).

Animal Disease Summary: Veterinary Surveillance

International Rabies Reporting through FAO's EMPRES-i, 1 October to 31 December 2013

Country	Animal Infected	Animal Type	# Events
Peru	cattle	domestic	26
	horse	domestic	7
France	cat	unknown	1
Greece	cattle	domestic	2
	red fox	wild	7
Congo	dog	unknown	1
Taiwan	ferret-badger	wild	127

- In the fourth quarter of 2013, five countries reported 171 rabies-associated events to the FAO EMPRES-i database.
- Events include cases and exposures in domestic, wild and feral animal populations.
- Taiwan continues to monitor its large epizootic of rabies in wild ferret-badgers, which follows a period of being declared rabies-free by WHO for more than 50 years. The country is promoting its domestic animal vaccination program to prevent spread of the disease.

Animal Disease Summary: Rabies

Laboratory Services Rabies Specimen Testing, 1 October to 31 December 2013

	Species	# Samples Tested	# Human Exposures	# DFA* Indeterminate	% DFA Indeterminate	# DFA Positive	% DFA Positive	# MNA* Positive	% MNA Positive
Central Command									
Afghanistan	Feline	6	4	1	17	0	0	0	0
	Total	6	4	1	17	0	0	0	0
Kuwait	Mouse	1	1	0	0	0	0	0	0
	Total	1	1	0	0	0	0	0	0
PHCR-Europe									
Kaiserslautern, Germany	Feline	2	2	0	0	0	0	0	0
	Total	2	2	0	0	0	0	0	0
Rota, Spain	Canine	1	1	0	0	0	0	0	0
	Total	1	1	0	0	0	0	0	0
PHCR-North									
Ft Knox, KY	Rat	1	1	0	0	0	0	N/A	N/A
	Total	1	1	0	0	0	0	N/A	N/A
PHCR-South									
Ft Polk, LA	Feline	1	1	0	0	0	0	N/A	N/A
	Total	1	1	0	0	0	0	N/A	N/A
JBSA Ft Sam Houston	Bat	2	0	0	0	1	50	N/A	N/A
	Total	2	0	0	0	1	50	N/A	N/A
Ft Hood	Canine	1	1	0	0	0	0	N/A	N/A
	Feline	1	1	0	0	0	0	N/A	N/A
	Total	2	2	0	0	0	0	N/A	N/A
Guantanamo Bay, Cuba	Feline	26	0	0	0	0	0	N/A	N/A
	Total	26	0	0	0	0	0	N/A	N/A
PHCR-West									
Ft Irwin, CA	Canine	1	1	0	0	0	0	N/A	N/A
	Total	1	1	0	0	0	0	N/A	N/A
Ft Carson, CO	Fox	1	0	0	0	0	0	N/A	N/A
	Total	1	0	0	0	0	0	N/A	N/A
JB Elmendorf-Richardson, AK	Canine	1	5	0	0	0	0	N/A	N/A
	Total	1	5	0	0	0	0	N/A	N/A

*DFA: Direct Fluorescent Antibody; MNA: Mouse Neuroblastoma Cells

- In the fourth quarter of 2013, PHCR-Europe received 7 animal samples from Central Command (CENTCOM) locations for rabies testing. 6 of these specimens were cats from Afghanistan and 1 was a mouse from Kuwait. 5 human exposures were associated with the samples. One cat specimen tested indeterminate for rabies. Indeterminate test results should be treated as positives, and persons sustaining risk exposures should be evaluated for rabies prophylaxis.
- PHCR-Europe tested 3 specimens submitted from Germany (2 cats) and Spain (1 dog). All tested negative.
- CONUS Army Installations from all PHC regions submitted 9 samples to the DoD Food Analysis and Diagnostic Laboratory (FADL) for rabies testing. Samples included 3 dogs, 2 cats, 1 fox, 1 rat and 2 bats. One bat from JB Ft Sam Houston with no documented human exposure tested positive for rabies.
- 26 cat specimens were submitted from Guantanamo Bay with no associated human exposures. None tested positive.

Animal Disease Summary: Rabies

United States Annual Rabies Data Summary

State	Data up to	Bat	Skunk	Cat	Dog	Fox	Raccoon	Other mammals	Total
Alabama	27-Dec	7	0	2	2	1	26	0	38
Arizona	31-Dec	39	11	0	0	4	0	5	59
Arkansas	31-Dec	26	118	3	3	0	0	2	152
California	8-Nov	145	5	1	1	0	0	0	152
Colorado	31-Dec	70	102	4	0	7	3	5	191
Connecticut	31-Oct	22	23	3	0	6	72	4	130
Florida	31-Dec	20	2	8	0	2	71	2	105
Illinois	31-Dec	55	0	0	0	0	0	0	55
Iowa	15-Oct	6	4	0	0	0	0	2	12
Maine	31-Dec	7	20	0	0	4	20	0	51
Maryland	31-Dec	50	19	24	1	33	234	14	375
Massachusetts	31-Dec	18	32	2	0	5	34	6	97
Missouri	31-Dec	13	20	2	3	0	0	1	39
Nebraska	31-Dec	6	14	3	1	0	0	9	33
New Hampshire	31-Dec	3	7	2	0	5	13	3	33
New Jersey	31-Dec	66	51	18	0	13	156	11	315
New Mexico	31-Dec	6	3	0	1	1	0	0	11
New York	31-Dec	83	50	9	0	31	147	16	336
North Carolina	31-Dec	28	55	20	5	62	204	6	380
Oklahoma	31-Dec	3	59	2	7	1	0	13	85
Oregon	6-Nov	7	0	0	0	2	0	1	10
Pennsylvania	31-Dec	75	34	40	1	31	165	10	356
Rhode Island	30-Jun	2	2	0	0	0	9	1	14
Tennessee	31-Dec	8	19	0	5	1	0	4	37
Texas	13-May	33	45	4	3	0	2	5	92
Virginia	31-Dec	15	114	36	1	55	242	16	479
Washington	18-Dec	12	0	0	0	0	0	0	12
West Virginia	30-Sep	1	13	3	0	3	47	3	70
Total		826	822	186	34	267	1445	139	3719

- 29 states had publically available animal rabies testing data which included type of animal tested. 20 states had no available data for 2013. Hawaii is the only rabies-free US state.
- A total of 3719 animals tested positive for rabies.
- Data in the table reflects only positive results. The total number of animals tested is unknown. Although some states reported this data, many did not.
- Virginia had the highest number of positive tests with 12.9% (470) of all cases. Nearby mid-Atlantic states (NC, MD, PA, NY and NJ) were the only other states to report more than 300 cases.
- Raccoons were the most frequently reported animals with 38.9% of all positive samples reported from 16 states.
- Bats (22.2%) and skunks (22.1%) were the next most commonly reported animals. Foxes (7.2%), cats (5%), dogs (0.01%) and miscellaneous other mammals (3.7%) made up the rest of reported cases.
- Bats are the only animal represented in all 29 states' data. Different species of bat were tested depending on region. Some states specified which bats were tested but others did not; therefore, this data was not included.
- Other mammals tested included (in order of number of cases): cattle, groundhogs, horses, bobcats, rodents/rabbits, goats, coyotes, sheep, opossum, llama and deer. 8 positive samples were from unspecified wild animals.

Numbers represent positive cases for each animal type in each state. Data was collected from publicly available reports on state government websites. Many states had completed data entry for the 2013 calendar year; however, when completed data was not available, the most recent numbers were noted along with the date of last entry.

Animal Disease Summary: Avian Influenza & Lab Services

International Avian Influenza Reported in FAO's EMPRES-I, 1 October to 31 December 2013

Country	Influenza Serotype	Animal(s) Infected	Animal Type	# of Events
China	H5N1	Chicken, Duck	Domestic	6
	H7N9	Unspecified bird	Domestic	12
China Hong Kong SAR	H7N9	Unspecified bird	Domestic	2
Cambodia	H5N1	Unspecified bird	Unknown	6
Indonesia	H5N1	Chicken, Duck, Unspecified	Domestic	23
Nepal	H5N1	Chicken	Domestic	9
Viet Nam	H5N1	Unspecified bird	Domestic	2

- In the fourth quarter of 2013, five countries plus The People's Republic of China Special Administrative Region (SAR) Hong Kong reported evidence of avian influenza.
- The highest number of events of Influenza A(H5N1) were reported from Indonesia.
- China and Hong Kong SAR were the only locations to report A(H7N9) in poultry or environmental samples.
- For additional information on A(H7N9) please see [page 11](#).

Laboratory Services Animal Testing, 1 October to 31 December 2013

- Blood or ocular samples from three military working dogs (MWD) and one pet dog were submitted to Laboratory Services at PHCR-North.
- One MWD blood sample from Groton, CT and one sample from a pet dog in Ft. Belvoir were negative for *Ehrlichia ewingii* and *E. chaffeensis*. One MWD sample from Ft. Meade tested negative for the causative agents of Lyme disease (*B. burgdorferi*), anaplasmosis (*A. phagocytophilum*) and rickettsial disease (*Rickettsia* sp.).
- An ocular sample from one MWD at Ft. Bragg tested negative for Leishmaniasis.

Vector Surveillance Summary: Tick Surveillance

Environmental and Host Tick Collection Programs, 1 October to 31 December 2013

Installation	Host Animal	<i>Ixodes scapularis</i>						<i>Amblyomma americanum</i>	
		<i>Babesia microti</i>		<i>Anaplasma phagocytophilum</i>		<i>Borrelia burgdorferi</i>		<i>Ehrlichia chaffeensis</i>	
		# pos	# tested	# pos	# tested	# pos	# tested	# pos	# tested
FROM HOST									
Fort Drum, NY	Pet Dog	0	1	0	1	0	1		
Fort Belvoir, VA	MWD	0	1	0	1	0	1		
Fort Dix, NJ	Dog			0	1				
Total		0	2	0	3	0	2		
FROM ENVIRONMENT									
Fort Drum, NY	N/A	0	44	0	44	0	44		
USSS Training Center, MD	N/A	0	1	0	1	0	1	0	10
Total		0	45	0	45	0	45	0	10

- In the fourth quarter of 2013, 3 *I. scapularis* ticks were collected from veterinary patients and submitted to PHCR-N Laboratory Services for testing. All three ticks, which came from Ft. Drum, Ft. Belvoir and Ft. Dix, were negative for all pathogens for which they were tested.
- 45 *I. scapularis* ticks were collected from the environment; 44 from Ft. Drum and 1 from US Secret Service Training Center (USSTC) in MD. 10 *A. americanum* were also collected at USSSTC. No ticks tested positive for any human pathogen.
- 1 *Ixodes* spp. tick each was collected at Baumholder and Kaiserslautern. Both tested negative for any pathogen.

Vector Surveillance: Tick Summary

Department of Defense Human Tick Test Kit Program, 1 October to 31 December 2013

- From 1 October to 31 December 2013, 76 ticks were submitted to the DoD Human Tick Test Program. 91% (n=69) of submissions were sent from installations in PHCR-North. 5% (n=4) were submitted from PHCR-South installations and 4% (n=3) from PHCR-West installations.
- 63 *I. scapularis* ticks were tested. 17.5% (11/63) tested positive for *B. burgdorferi*, the causative agent of Lyme disease. All positive ticks were submitted from installations in PHCR-North where Lyme disease is endemic. No ticks tested positive for any other pathogen.
- 14 *A. americanum* ticks were submitted for testing from installations in all three CONUS regions. No ticks tested positive for human pathogens.
- Two *Ixodes* spp. ticks were collected from humans and submitted to PHCR-Europe for testing. Neither tick was positive for human pathogens.

Installation	Ticks Tested	<i>Ixodes scapularis</i>						<i>Amblyomma americanum</i>			
		<i>Anaplasma phagocytophilum</i>		<i>Babesia microti</i>		<i>Borrelia burgdorferi</i>		<i>Ehrlichia chaffeensis</i>		<i>Ehrlichia ewingii</i>	
		Total #	# positive	# tested	# positive	# tested	# positive	# tested	# positive	# tested	# positive
PHCR-North											
Aberdeen Proving Ground, MD	15	0	15	0	15	4	15				
Carlisle Barracks, PA	2	0	2	0	2	0	2				
Fort Belvoir, VA	9	0	9	0	9	0	9				
Ft Detrick, MD	3	0	3	0	3	0	3				
Ft Drum, NY	16	0	16	0	16	2	16				
Ft Eustis, VA	2							0	2	0	2
Ft Indiantown Gap, PA	2	0	2	0	2	1	2				
Ft Meade, MD	8	0	3	0	3	1	3	0	5	0	5
Ft Myer, VA	1	0	1	0	1	0	1				
JB Dix-Lakehurst-McGuire, NJ	2	0	2	0	2	0	2				
Pentagon, VA	2	0	1	0	1	0	1	0	1	0	1
Picatinny Arsenal, NJ	7	0	7	0	7	3	7				
Region Total	69	0	61	0	61	11	61	0	8	0	8
PHCR-South											
Ft Campbell, KY	4					0	0	0	4	0	4
Region Total	4	0	0	0	0	0	0	0	4	0	4
PHCR-West											
Camp Ripley, MN	1	0	1	0	1	0	1				
Ft Leavenworth, KS	1							0	1	0	1
Ft Riley, KS	1							0	1	0	1
Region Total	3	0	1	0	1	0	1	0	2	0	2
Command Total	76	0	62	0	62	11	62	0	14	0	14

Vector Surveillance: Mosquito Summary

Mosquito Pool Testing, 1 October to 31 December 2013

Installation	Mosquito Type	Total Pools Tested	West Nile Virus	
			# Pools Positive	% Pools Positive
PHCR-North				
Armed Forces Retirement Housing, DC	<i>Culex spp.</i>	1	1	100
	<i>Aedes spp.</i>	1	0	0
JB Anacostia-Bolling, DC	<i>Culex spp.</i>	23	2	9
Walter Reed National Military Medical Center, MD	<i>Culex spp.</i>	3	0	0
Forest Glen Annex, MD	<i>Culex spp.</i>	1	0	0
Walter Reed, Glen Haven Annex, MD	<i>Culex spp.</i>	1	1	100
Region Total	<i>Culex spp.</i>	29	4	14
	<i>Aedes spp.</i>	1	0	0
PHCR-South				
Fort Hood, TX	<i>Culex spp.</i>	59	0	0
Fort Sill, OK	<i>Culex spp.</i>	57	5	9
Fort Stewart, GA	<i>Culex spp.</i>	7	0	0
Region Total	<i>Culex spp.</i>	123	5	4
PHCR-West				
Fort Bliss, TX	<i>Culex spp.</i>	40	1	3
Yuma Proving Ground, AZ	<i>Culex spp.</i>	13	0	0
Fort Riley, KS	<i>Culex spp.</i>	1	0	0
Region Total	<i>Culex spp.</i>	54	1	2
Command Total	<i>Culex spp.</i>	206	10	5
	<i>Aedes spp.</i>	1	0	0
	All	207	10	5

- From 1 October to 31 December 2013, 207 mosquito pools were tested for West Nile Virus (WNV). 206 of these pools were *Culex* spp. mosquitoes and 1 was *Aedes* spp.
- PHCR-North reported 4 positive pools of *Culex* spp. of 29 tested. One pool of *Aedes* spp. was negative for WNV. All positive pools came from the Washington DC metropolitan area.
- PHCR-South tested 123 pools of *Culex* spp. mosquitoes. 6 pools (4.8%) tested positive, all from Fort Sill, OK. In 2013, a total of 1015 mosquitoes were collected from Army installations in PHCR-South. 35 positive pools were detected, 34 from Fort Sill and one from Fort Stewart.
- Of 54 pools of *Culex* spp. mosquitoes tested by PHCR-West, 1 (2%) was positive. This pool was collected from Fort Bliss, TX. In 2013, 248 pools of mosquitoes were tested from Army installations in PHCR-West. 26 positive pools were detected from Fort Bliss (22), Fort Riley (3) and Yuma Proving Ground (1).
- PHCR-Europe collected and identified 3000 mosquitoes from Camp Lemonnier, Djibouti. None warranted testing for human disease pathogens.

PHCR-North Annual Mosquito Summary

- PHCR-N reported 40 positive pools of 656 tested for WNV. All positive pools were collected from sites in the DC metropolitan area including: Walter Reed National Military Medical Center, Fort McNair, Armed Forces Retirement Home, Marine Barracks, Bolling AFB, Washington Navy Yard, and Naval Support Facility.
- The first positive pool was detected on May 28, more than two months before the first confirmed human case was reported in a civilian from the region.
- Mid-season Minimum Infection Rates (MIR) were higher in 2013 than in 2012. In week 33, the MIR peaked at 15.6 infected mosquitoes per 1000 tested. The MIR increased noticeably in the two weeks preceding the first human case in the region.
- In 2013, no WNV cases in Army service members or beneficiaries were reported in PHCR-N. Maryland and Virginia reported 22 confirmed human cases including one fatality. Nationwide, 2374 confirmed cases were reported to the CDC; 114 of the cases resulted in death.

Focus On: Influenza A(H7N9)

Event

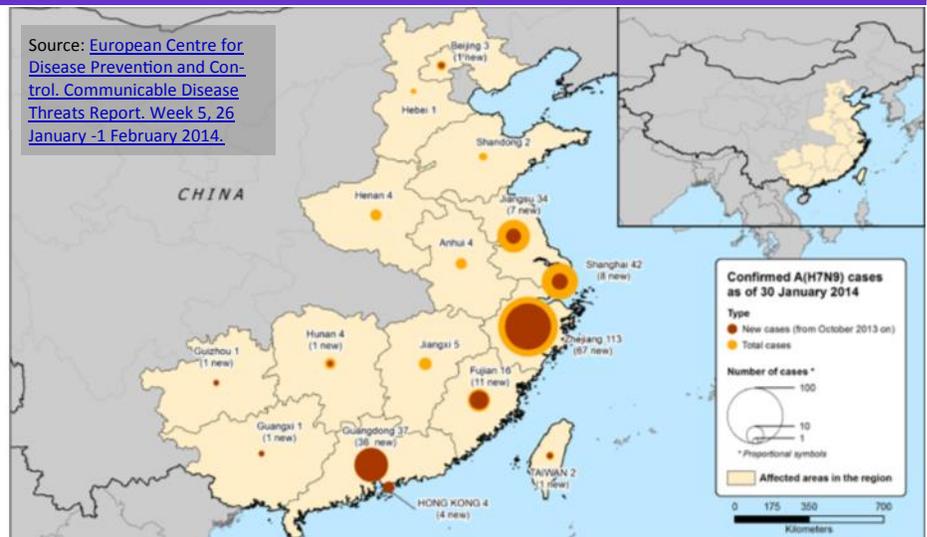
- On 31 March 2013, China notified the World Health Organization (WHO) of three cases of human infection with influenza A(H7N9), including two deaths. This was the first time this particular avian influenza virus was reported in humans or animals.¹

Current Status

- Cases continued to be reported throughout 2013, presenting as two waves of infection. A retrospective review indicated the initial wave of 133 cases occurred from February to May, plus two cases reported in the summer. Beginning in October 2013, a second wave of cases was reported (142 cases as of 30 January 2014). As of 31 January 2014, there were a total of 277 human A(H7N9) cases, including 61 deaths.²

Clinical Features and Epidemiology

- The majority of cases present as rapidly progressing severe pneumonia. Atypical clinical presentation for influenza has not been reported. To date, almost all cases have a history of contact with birds or poultry markets. No health care-associated clusters have been reported.
- China is the only country to report cases of human A(H7N9) infection. Cases have been reported in both men and women (though male cases predominate), and across a wide range of ages. The mean age of cases is slightly lower in the second wave of infection than in the first wave (52 versus 58 years). Other avian influenza viruses (e.g., H5N1) display a seasonal pattern in temperate areas in which cases are less common in summer and more common in winter; A(H7N9) infections may follow a similar pattern.
- Laboratory analysis of A(H7N9) viruses isolated from humans, animals, and the environment during the second wave indicates the virus remains genetically similar to viruses isolated during the first wave.
- Exposure to the virus occurs during direct or indirect contact with infected poultry or contaminated environments. Evidence of infection has been found in chickens, ducks, and captive-bred pigeons in bird markets near locations where cases have been reported. Because this virus does not appear to cause clinical signs of illness in infected poultry, links between infected poultry and human cases have been difficult to establish.



Distribution of confirmed A(H7N9) cases by place of reporting, week 14/2013 to week 05/2014 (n=273).

Outlook

- Officials expect more A(H7N9) cases to be reported from China and, potentially, surrounding countries. Evidence does not currently support sustained human-to-human transmission of this virus, and the WHO does not recommend any trade or travel restrictions related to A(H7N9). The WHO advises travelers to countries with known outbreaks of avian influenza to avoid poultry farms, contact with animals in live bird markets, contact with surfaces that appear contaminated with animal feces, and areas where poultry may be slaughtered. Additionally, travelers should employ good food safety and hygiene practices, including frequent hand washing with soap.³

Reference: Data Resource Summary

Case Definitions and Incidence Rules Used for Human Zoonotic Disease Surveillance

For this report, zoonotic diseases were defined as diseases with an animal host or reservoir that can be transmitted to a human. RME definitions or ICD-9 codes were used to select medical encounters as suggested in the 2012 Armed Forces RME Guidelines and Case Definitions. Armed Forces Health Surveillance Center (AFHSC) case definitions and incident rules were then applied: one RME or one inpatient encounter with any of the defining diagnoses in any diagnostic position is considered a case. Borreliosis, Crimean-Congo hemorrhagic fever, eastern/western equine arboviruses and West Nile fever virus all must have two outpatient encounters occurring within 60 days of each other, with any of the defining ICD-9 codes in any diagnostic position to be considered an outpatient case.

More information on these rules can be found at: http://afhsc.mil/viewDocument?file=CaseDefs/Web_11_INFECTIOUS_DISEASE_NOV11.pdf.

The Military Health System Management Analysis and Reporting Tool (M2)

M2 is a web-based medical and personnel data repository that contains information on military treatment facility medical records, demographic data, laboratory records, and Tricare insurance claims (inpatient and outpatient). M2 was queried based on zoonotic disease ICD-9 codes as referenced in the 2012 Armed Forces RME Guidelines and Case Definitions. ICD-9 codes were used to select medical encounters from the first quarter of 2013 based on the date of service variable in M2. Data were pulled to identify inpatient and outpatient encounters for those patients who had received military medical facility care and services purchased through the Tricare Management Agency medical insurance program.

Disease Reporting System-internet (DRSi)

DRSi is a web-based application developed by the Navy that the Army uses to monitor RMEs. Cases that meet RME case definitions are entered manually into DRSi. These medical event reports are reviewed at the US Army Public Health Command Disease Epidemiology Program for completeness and accuracy. For this report, only RME records that are considered final with a case status of confirmed or probable are included in this report; records are queried using date of diagnosis.

US Army Public Health Command Laboratory Sciences Portfolio

US Army Public Health Command Laboratory Sciences at the Army Institute of Public Health (AIPH) and PHCR-Europe, -North, and -South completed all of the vector-borne surveillance testing and US Army installation-related rabies specimen testing. Each PHCR collated the results from their area of responsibility and sent the data to the USAPHC Disease Epidemiology Program at the end of the quarter for the purposes of this Zoonotic Disease Summary.

Global Animal Disease Information System (EMPRES-i)

EMPRES is the Emergency Prevention System group within the Food and Agricultural Organization of the United Nations (FAO). EMPRES has developed the database EMPRES-i, which stands for the Emergency Prevention System's Global Animal Disease Information System. The EMPRES-i system uses official and unofficial sources to confirm or deny reports of animal disease. For the purposes of this report, all confirmed H5N1, H7N9, and rabies events with distinct identification numbers were considered separate events. Events were queried based on the date of report into the system.

Program for Monitoring Emerging Diseases (ProMED)

The Program for Monitoring Emerging Diseases (ProMED) is an internet-based system for rapid global dissemination on issues of public health concern, and is managed by the International Society for Infectious Diseases. It is populated by a variety of sources, including official notifications and media alerts; reports can be contributed by individual subscribers as well. Submissions are reviewed by qualified moderators before being posted to the system for global dissemination. For the purposes of this report, each alert was individually assessed to determine the number and location of events. When case counts could be ascertained, they were summarized; otherwise the number of different events were reported. Follow-up reports were not included. ProMED mail was searched using the search function on the website for key events identified over the course of the quarter by the authors, who monitor the ProMED emails as part of their daily routines.

US Army Public Health Command Zoonotic Disease Summary

Additional Disease Epidemiology Program Resources:

Epidemiology Training: <http://phc.amedd.army.mil/topics/healthsurv/de/Pages/Epi-TechTraining.aspx>

DRSi Resources: <http://phc.amedd.army.mil/topics/healthsurv/de/Pages/DRSiResources.aspx>

Resource Materials: <http://phc.amedd.army.mil/topics/healthsurv/de/Pages/ResourceMaterials.aspx>

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