

DoD Global, Laboratory-Based, Influenza Surveillance Program



USAF School of Aerospace Medicine

2014 - 2015

Cumulative Results

Locations	88
Collected	5,745
Tested	5,665



Respiratory Highlights

19 April - 2 May 2015 (Surveillance Weeks 16 & 17)

- During 19 April - 2 May 2015, a total of 76 specimens were collected and received from 32 locations. Results were finalized for 49 specimens from 23 locations. During Week 16, the laboratory identified two influenza B. During Week 17, three influenza A(H3N2) and one influenza B were identified.
- Sanofi Pasteur voluntarily issued a recall on three lots (UI196AA, UI190AC, and UI190AD) of its Fluzone® Quadrivalent flu vaccine, supplied in multi-dose vials. The vaccine's potency fell below a pre-specified limit prior to the expiration of the vaccine and could possibly provide less than optimal effectiveness. The CDC is not recommending revaccination for people who received the recalled vaccine ([CDC Report](#), cited 5 May 2015).
- On 27 April 2015, a 27 year old male in Ohio who was hospitalized after seeking care for an acute respiratory illness died after a clinical course of pneumonia, respiratory failure, and cardiac arrest. RT-PCR testing results from the state public health laboratory was suggestive of a novel influenza A virus. On 2 May 2015, CDC testing confirmed infection with an H1N1v virus of classical swine origin. This is the first variant influenza virus infection reported in the U.S. in 2015 and it is the first H1N1v-associated fatality. The patient worked at a livestock facility that housed cattle and swine, but his employer states that he did not have direct contact with swine in the week prior to his illness onset. No illnesses have been reported from people who had contact with him during his illness. An investigation is ongoing and further testing of the virus at the CDC is in progress. ([CDC Case Report](#), cited 5 May 2015).

Influenza A 1,789

A(H1N1)pdm09	3
A(H3N2)	1,781
A & B	1
A & Parainfluenza	1
A(H3N2) & B/Victoria & Adenovirus & Rhino/Enterovirus	1
A(H3N2) & Coronavirus	1
A(H3N2) & Rhino/Enterovirus	1

Influenza B 248

B/Unknown or pending lineage*	209
B & Rhino/Enterovirus	1
B/Victoria	12
B/Yamagata	26

Other Respiratory Pathogens 1,018

Adenovirus	108
<i>Bordetella pertussis</i>	0
<i>Chlamydia pneumoniae</i>	2
Coronavirus	88
Human Metapneumovirus	62
<i>Mycoplasma pneumoniae</i>	32
Parainfluenza	156
RSV	206
Rhino/Enterovirus	254
Non-influenza Co-infections	110

Lab data are current as of 4 May 2015. Results are preliminary and may change as more results are received.
*USAFSAM does not sequence all influenza B specimens to determine lineage.

Table 1. Results by region and location for specimens collected and finalized during Weeks 16 & 17

		A(H3N2)	B	Adenovirus	hMPV	Parainfluenza	Rhino/Enterovirus	Non-Influenza Co-Infection	No Pathogen	Total
Region*										
PACOM	Misawa AB, Japan	-	-	-	-	-	-	-	-	1
Region 1	NHCNE Newport, RI	-	1	1	-	-	-	-	2	4
Region 2	JB McGuire-Dix-Lakehurst, NJ	-	1	-	-	-	-	-	-	1
	USMA - West Point, NY	2	-	-	-	1	-	-	2	5
Region 3	Dover AFB, DE	-	-	-	-	-	-	-	1	1
Region 4	Eglin AFB, FL	-	-	-	-	1	-	-	-	1
	Keesler AFB, MS	-	-	-	-	-	-	-	1	1
	Moody AFB, GA	-	-	-	-	3	-	-	2	5
	Seymour Johnson AFB, NC	-	-	-	1	-	-	-	-	1
Region 5	Wright-Patterson AFB, OH	-	-	-	-	-	1	-	-	1
Region 6	Altus AFB, OK	-	-	-	-	1	-	-	-	1
	Cannon AFB, NM	-	-	-	-	1	-	-	1	2
	Sheppard AFB, TX	-	-	-	-	2	-	-	2	4
	Tinker AFB, OK	-	-	-	3	-	1	-	-	4
Region 7	McConnell AFB, KS	-	-	-	-	-	-	-	1	1
Region 8	Ellsworth AFB, SD	-	1	-	-	-	-	-	-	1
	FE Warren AFB, WY	-	-	-	-	1	-	-	-	1
	Hill AFB, UT	-	-	-	-	-	-	-	2	2
Region 9	Davis-Monthan AFB, AZ	1	-	-	-	1	1	-	1	4
	Edwards AFB, CA	-	-	-	-	-	-	-	1	1
	Travis AFB, CA	-	-	-	-	-	-	-	4	4
	Vandenberg AFB, CA	-	-	1	-	-	-	-	-	1
Region 10	NH Bremerton, WA	-	-	-	-	-	-	-	2	2
Total		3	3	2	1	13	3	1	23	49

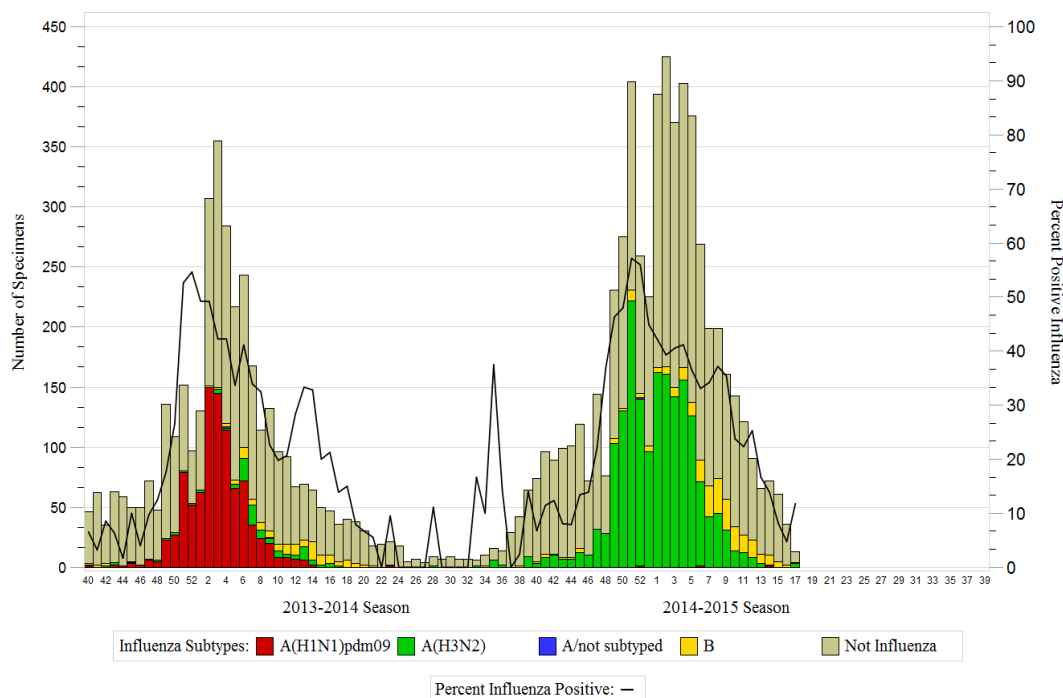
*US Regions are based on Health & Human Services regions. Other locations are defined by COCOM.

Distribution Statement A: Distribution is unlimited. 88ABW-2015-2375, 13 May 2015.

Email: USAFSAM.PHRFlu@us.af.mil, <https://gumbo2.area52.afnoapps.usaf.mil/epi-consult/influenza>

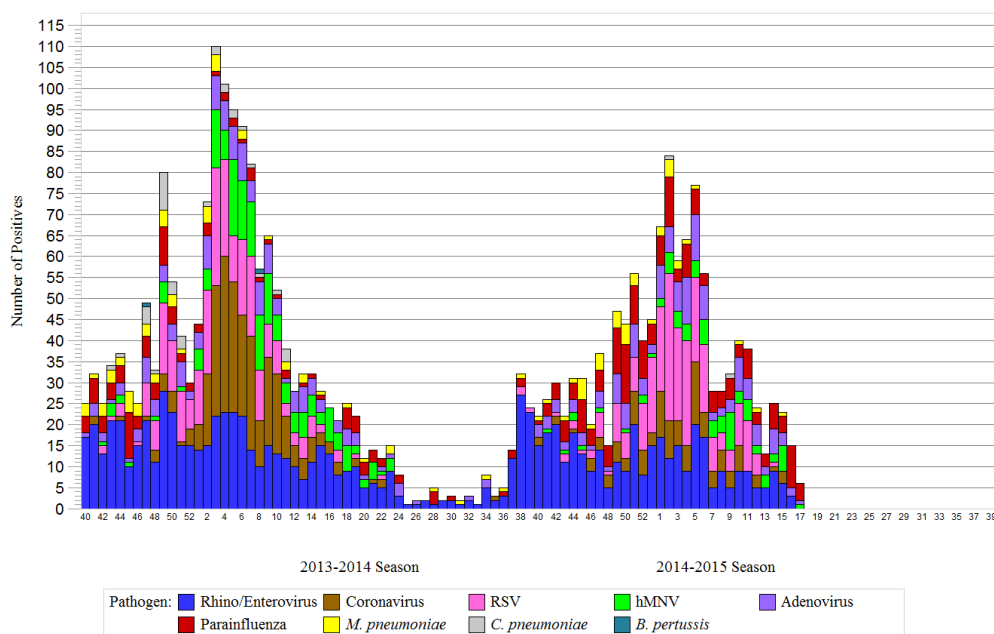
Laboratory Results - Cumulative for Season

Graph 1. Percent influenza positive by week: 2013-2014 surveillance year and through Week 17 of the 2014-2015 surveillance year



Note: One specimen positive for influenza A(H3N2)v has been excluded from the graph during the 2013-2014 season. Additionally, dual influenza co-infections are excluded from this graph. Specimens with pending results are used in the denominator to calculate percent positive, but are not displayed in the graph.

Graph 2. Other respiratory pathogen results by week: 2013-2014 surveillance year and through Week 17 of the 2014-2015 surveillance year

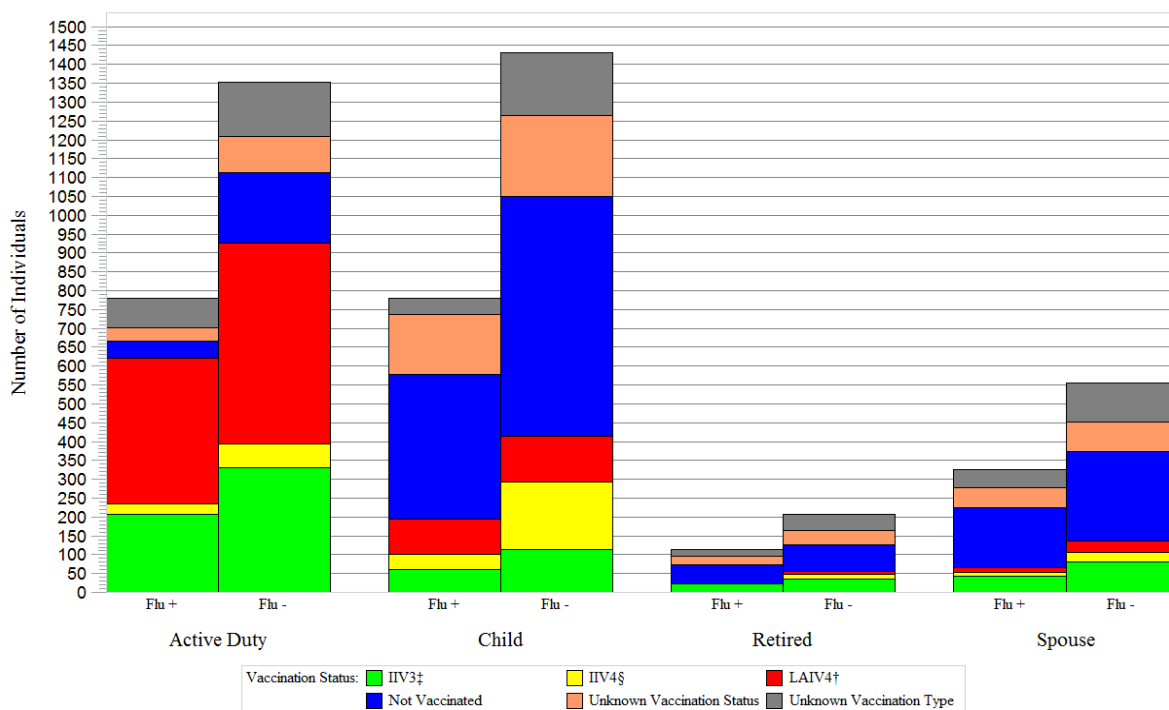


Note: Due to change in protocol between the surveillance years 2013-2014 and 2014-2015, a direct comparison between the years cannot be made.

Distribution Statement A: Distribution is unlimited. 88ABW-2015-2375, 13 May 2015.

Email: USAFSAM.PHRFlu@us.af.mil, <https://gumbo2.area52.afnoapps.usaf.mil/epi-consult/influenza>

Graph 3. Vaccination status by beneficiary type for the 2014-2015 surveillance year through Week 17



‡ Influenza, inactivated vaccine (trivalent)

§ Influenza, inactivated vaccine (quadrivalent)

† Live, attenuated influenza vaccine (quadrivalent)

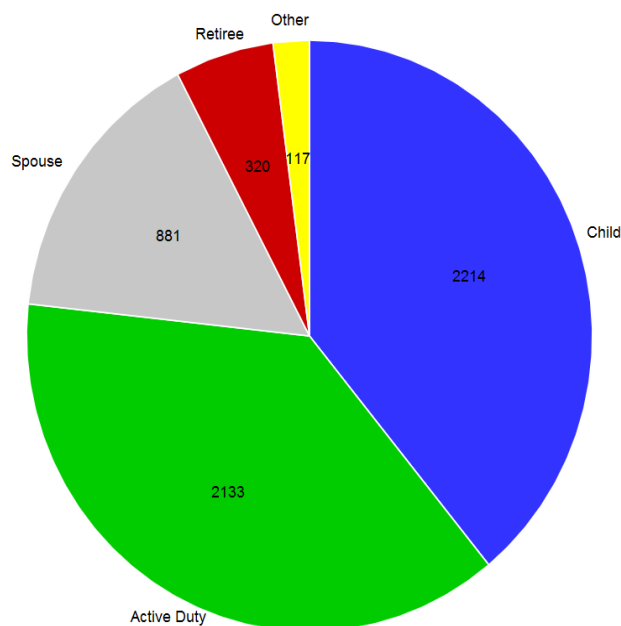
Table 2. ILI by age group for the 2014-2015 surveillance year through Week 17

Age Group	Frequency	Percent
0-5	1221	21.55
6-9	436	7.7
10-17	557	9.83
18-24	805	14.21
25-44	1892	33.4
45-64	576	10.17
65+	167	2.95
Unknown	11	0.19

Demographic Summary

Of 5,665 ILI cases, 2,133 are service members (37.6%), 2,214 are children (39.1%), 881 (15.6%) are spouses, and 439 (7.8%) are retirees & other beneficiaries. The median age of ILI cases with known age (n=5,654) is 23 (range 0, 94) and 2,214 (39.1%) of these specimens are from ILI cases less than 18 years of age.

Graph 4. ILI by beneficiary status for the 2014-2015 surveillance year through Week 17



Laboratory Results—Through Current Surveillance Week 17

Table 3. Cumulative results by region and location for specimens collected during the 2014-2015 surveillance year

Region*		A(H1N1)pdm09	A(H3N2)	A/not subtyped & Para	A(H3N2) & B/Victoria & Adeno & Rhino/Entero	A(H3N2) & Corona	A(H3N2) & Rhino/Entero	Influenza A & B	B	B/Victoria	B/Yamagata	B & Rhino/Entero	Adenovirus	C. pneumoniae	Coronavirus	hMPV	M. pneumoniae	Parainfluenza	RSV	Rhinovirus/Enterovirus	Non-Influenza Co-Infection	No Pathogen	Total	
Deployed	Country 1, Location B	-	26	-	-	-	-	-	1	-	-	-	-	-	4	3	-	-	-	18	3	54	109	
	Country 2, Location A	1	48	-	-	-	1	-	5	-	3	-	-	-	-	-	-	-	-	6	1	27	92	
	Country 3, Location A	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2		
PACOM	CFA Okinawa, Japan	-	4	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	2	-	20	28	
	Camp Zama, Japan	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6		
	Eielson AFB, AK	-	6	-	-	-	-	-	1	-	-	-	2	-	-	-	-	-	-	1	-	8	18	
	JB Elmendorf-Richardson, AK	-	7	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	5	14	
	JR Marianas - Andersen AFB, Guam	-	11	-	-	-	-	-	1	-	4	-	5	-	-	3	-	1	3	5	1	25	59	
	JR Marianas - NH Guam, Guam	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	
	Kadena AB, Japan	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	7	13	
	Kunsan AB, South Korea	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	12	
	Misawa AB, Japan	-	10	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2	-	11	24	
	Osan AB, South Korea	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	8	23	
	Tripler AMC, HI	-	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	
	Yokota AB, Japan	-	80	-	-	-	-	-	-	1	-	1	-	2	-	2	4	-	1	-	4	1	26	122
	Region 1	Hanscom AFB, MA	-	24	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	3	1	-	26	55
		NHCNE Newport, RI	-	16	-	-	-	-	-	4	-	-	-	2	-	-	-	-	-	2	1	2	22	49
USCG Academy, CT		-	10	-	-	-	-	-	1	-	-	-	1	-	-	-	1	1	-	2	1	11	28	
Region 2	Ft Drum, NY	-	64	-	-	-	-	-	19	-	2	-	5	-	5	5	1	4	10	19	10	59	203	
	JB McGuire-Dix-Lakehurst, NJ	-	32	-	-	1	-	-	2	-	-	-	-	-	-	-	-	-	2	4	1	28	70	
	USMA - West Point, NY	1	95	-	-	-	-	-	10	-	-	-	5	-	9	2	4	7	12	7	5	150	307	
Region 3	CG Base Portsmouth, VA	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	
	Dover AFB, DE	-	21	-	-	-	-	-	1	-	-	-	-	-	1	1	1	1	-	-	-	18	44	
	JB Anacostia-Bolling, DC	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	5	
	JB Andrews, MD	-	4	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	2	-	4	12	
	JB Langley-Eustis, VA	-	7	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	1	12	22	
	NCRM - Ft Belvoir CH, VA	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	4	1	4	11	
	NCRM - Walter Reed NMMC, MD	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	3	
	NMC Portsmouth, VA	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	2	3	
Region 4	CGS Mobile, AL	-	11	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	2	-	4	18	
	Columbus AFB, MS	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	26	
	Eglin AFB, FL	-	14	-	-	-	-	-	4	-	1	-	2	-	-	-	1	3	6	1	4	51	87	
	Ft Bragg, NC	-	30	-	-	-	-	-	-	-	-	-	2	-	3	2	-	2	7	3	2	36	87	
	Ft Campbell, KY	-	30	-	-	-	-	-	1	1	-	-	5	-	1	1	-	4	2	6	3	37	91	
	Hurlburt Field, FL	-	22	-	-	-	-	-	1	-	-	-	3	-	-	-	-	1	1	4	7	2	37	78
	JB Charleston (AF), SC	-	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	14	
	JB Charleston (Navy), SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2	-	2	5	
	Keesler AFB, MS	-	6	-	-	-	-	-	1	1	-	-	3	-	-	-	-	1	2	1	2	25	42	
	MacDill AFB, FL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	7	
	Maxwell AFB, AL	-	31	-	-	-	-	-	12	-	3	-	2	-	2	1	-	1	1	5	-	79	137	
	Moody AFB, GA	-	92	-	-	-	-	-	6	2	2	-	15	-	8	9	1	11	5	17	9	93	270	
	NH Beaufort, SC	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	2	1	14	20	
	NH Camp Lejeune, NC	-	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	9	74	
	NH Jacksonville, FL	-	1	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	4	1	1	8	
	Patrick AFB, FL	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	
	Robins AFB, GA	-	35	-	-	-	-	-	4	-	1	-	1	-	3	1	-	-	-	-	-	40	85	
	Seymour Johnson AFB, NC	-	15	-	-	-	-	-	-	-	-	-	2	-	-	1	-	1	3	5	-	13	40	
	Shaw AFB, SC	-	7	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	2	-	10	21	
	Tyndall AFB, FL	-	14	-	-	-	-	-	-	-	-	3	-	4	-	1	1	-	-	2	1	1	15	42
	USCG Base Elizabeth City, NC	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	

*US Regions are based on Health & Human Services regions. Other locations are defined by COCOM.

Continued on Page 5

DoD Global, Laboratory-Based, Influenza Surveillance Program

Laboratory Results—Through Current Surveillance Week 17

Table 3. Cumulative results by region and location for specimens collected during the 2014-2015 surveillance year (Continued from Page 4)

Region*		A(H1N1)pdm09	A(H3N2)	A/not subtyped & Para	A(H3N2) & B/Victoria & Adeno & Rhino/Entero	A(H3N2) & Corona	A(H3N2) & Rhino/Entero	Influenza A & B	B	B/Victoria	B/Yamagata	B & Rhino/Entero	Adenovirus	C. pneumoniae	Coronavirus	hMPV	M. pneumoniae	Parainfluenza	RSV	Rhinovirus/Enterovirus	Non-Influenza Co-Infection	No Pathogen	Total
Region 5	Scott AFB, IL	-	23	-	-	-	-	-	11	-	-	-	2	-	1	1	-	2	2	2	-	33	77
	Wright-Patterson AFB, OH	-	12	-	-	-	-	-	-	-	-	-	-	-	4	1	-	-	4	8	-	36	65
Region 6	Altus AFB, OK	-	16	-	-	-	-	-	6	-	-	1	3	-	1	-	-	6	7	3	2	113	158
	Barksdale AFB, LA	-	10	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	1	11	24
	Cannon AFB, NM	-	4	-	-	-	-	-	1	-	-	-	-	-	1	-	-	1	1	-	-	9	17
	Ft Hood, TX	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
	Holloman AFB, NM	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Laughlin AFB, TX	-	9	-	-	-	-	-	-	-	-	-	1	-	1	-	2	2	3	3	2	16	39
	Little Rock AFB, AR	-	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	33	52
	SAMMC, TX	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
	Sheppard AFB, TX	-	69	-	-	-	-	-	7	1	-	-	3	-	6	1	1	5	5	5	7	98	208
	Tinker AFB, OK	-	123	-	1	-	-	-	28	4	1	-	2	1	5	7	1	12	22	11	8	186	412
	USCG New Orleans, LA	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Vance AFB, OK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	3
Region 7	Ft Leavenworth, KS	-	5	-	-	-	-	-	-	-	-	-	2	-	1	1	-	-	1	1	-	13	24
	McConnell AFB, KS	-	38	1	-	-	-	1	4	-	-	-	-	-	3	-	-	-	-	4	-	27	78
	Offutt AFB, NE	-	67	-	-	-	-	-	14	-	1	-	3	-	5	-	2	8	1	11	1	135	248
Region 8	Buckley AFB, CO	-	2	-	-	-	-	-	3	-	-	-	-	-	1	-	-	-	1	1	-	9	17
	Ellsworth AFB, SD	-	30	-	-	-	-	-	15	1	2	-	2	-	5	1	4	7	1	3	2	37	110
	FE Warren AFB, WY	-	35	-	-	-	-	-	10	1	-	-	2	-	-	-	-	15	3	3	2	37	108
	Hill AFB, UT	-	34	-	-	-	-	-	1	-	1	-	-	-	-	-	2	3	4	6	2	32	85
	Malmstrom AFB, MT	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	1	-	2	10
	Minot AFB, ND	-	19	-	-	-	-	-	1	-	-	-	2	-	3	1	3	5	11	3	3	30	81
	Peterson AFB, CO	-	50	-	-	-	-	-	5	-	-	-	-	-	-	-	1	3	3	4	2	37	105
	USAF Academy, CO	-	26	-	-	-	-	-	3	-	-	-	-	-	-	-	1	1	-	1	-	30	62
Region 9	Beale AFB, CA	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
	Davis-Monthan AFB, AZ	-	26	-	-	-	-	-	2	-	-	-	-	-	2	2	-	2	1	2	1	44	82
	Edwards AFB, CA	-	8	-	-	-	-	-	3	-	-	-	-	-	-	-	-	2	-	-	-	12	25
	Los Angeles AFB, CA	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Luke AFB, AZ	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	14	28
	Nellis AFB, NV	-	19	-	-	-	-	-	2	-	1	-	1	-	-	-	-	-	2	2	-	26	53
	Travis AFB, CA	-	56	-	-	-	-	-	1	-	-	-	1	-	2	1	2	12	18	12	3	197	305
	USCG Island Alameda, CA	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	8
	Vandenberg AFB, CA	-	6	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	17	24
Region 10	CGS North Bend, OR	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3
	Fairchild AFB, WA	-	22	-	-	-	-	-	2	-	-	-	1	-	2	2	-	1	7	1	1	10	49
	Mt Home AFB, ID	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	-	-	7	21
	NH Bremerton, WA	1	87	-	-	-	-	-	9	-	-	-	15	1	4	6	3	21	38	28	17	331	561
Total		3	1781	1	1	1	1	1	209	12	26	1	108	2	88	62	32	156	206	254	110	2610	5665

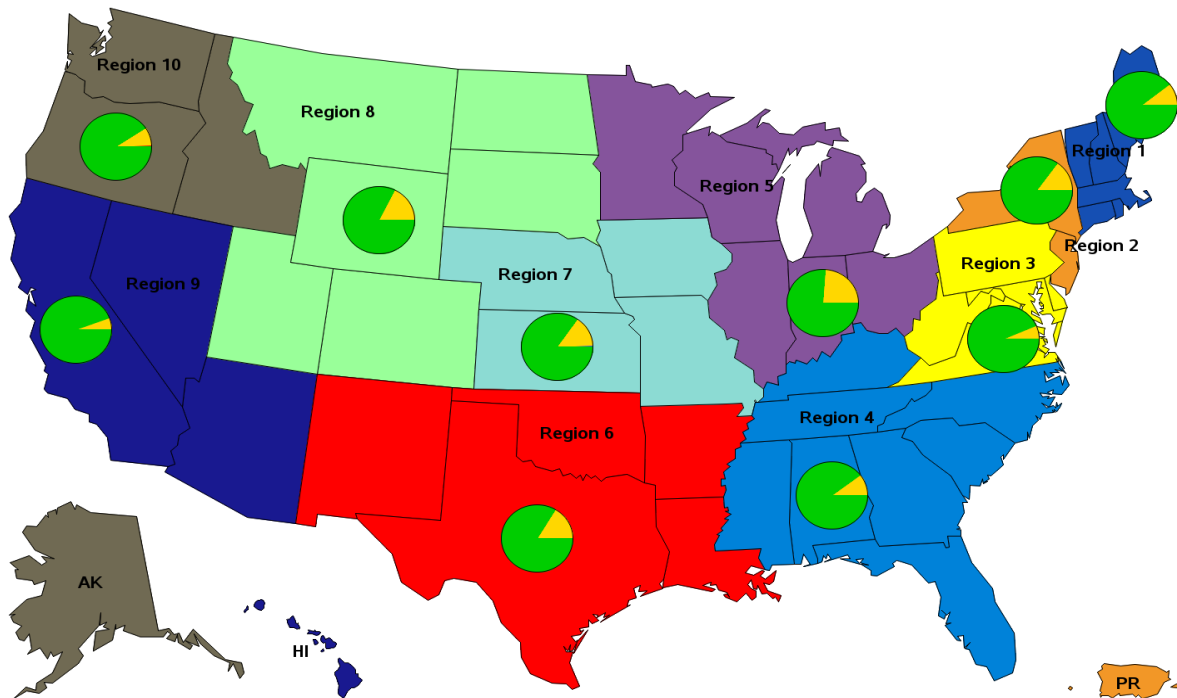
*US Regions are based on Health & Human Services regions. Other locations are defined by Cocom.

Distribution Statement A: Distribution is unlimited. 88ABW-2015-2375, 13 May 2015.

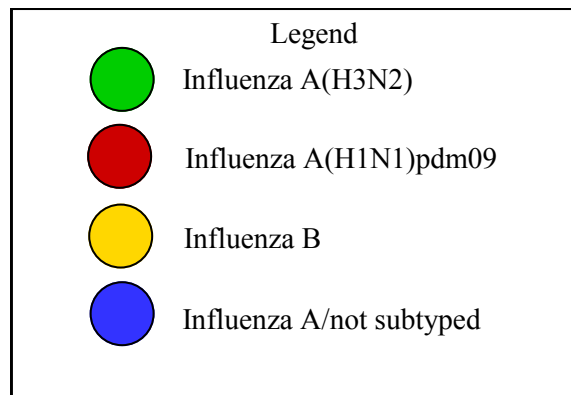
Email: USAFSAM.PHRFlu@us.af.mil, <https://gumbo2.area52.afnoapps.usaf.mil/epi-consult/influenza>

DoD Global, Laboratory-Based, Influenza Surveillance Program

Map 1. Percentage of influenza positives by region for the 2014-2015 surveillance year through Week 17

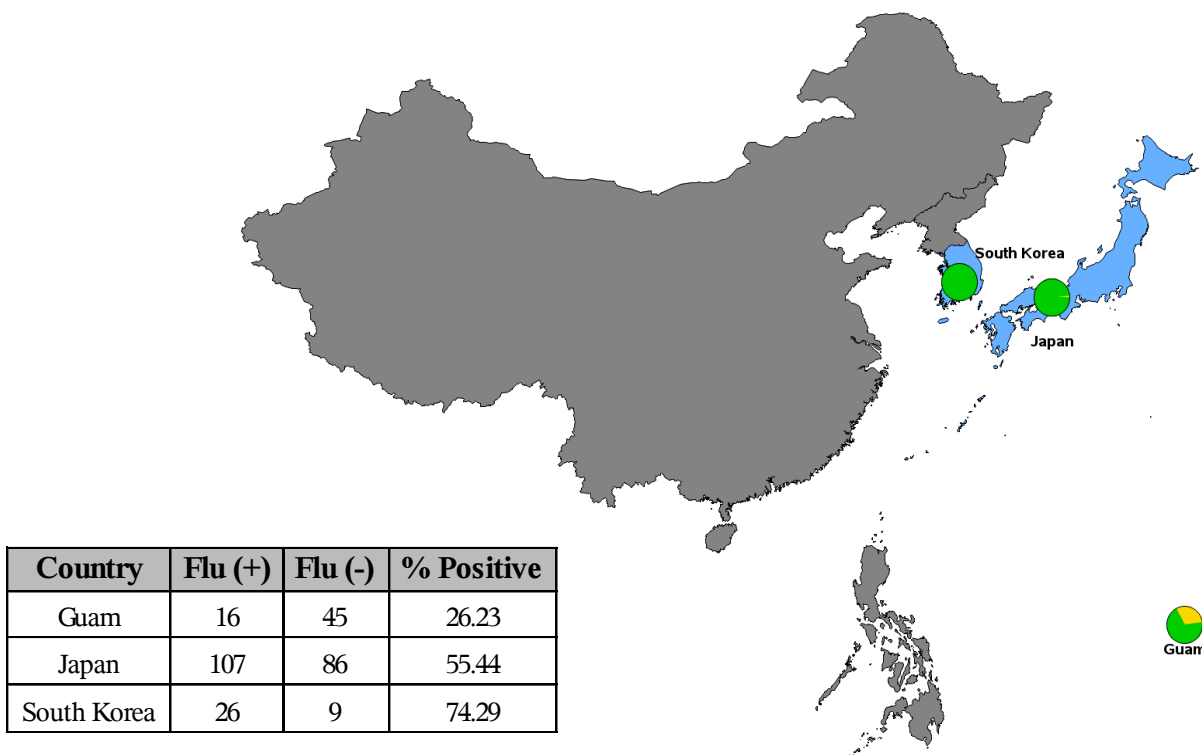


Region	Flu (+)	Flu (-)	% Positive
Region 1	56	77	42.11
Region 2	226	355	38.9
Region 3	45	60	42.86
Region 4	439	725	37.71
Region 5	46	97	32.17
Region 6	306	622	32.97
Region 7	130	220	37.14
Region 8	243	337	41.9
Region 9	160	387	29.25
Region 10	148	519	22.19

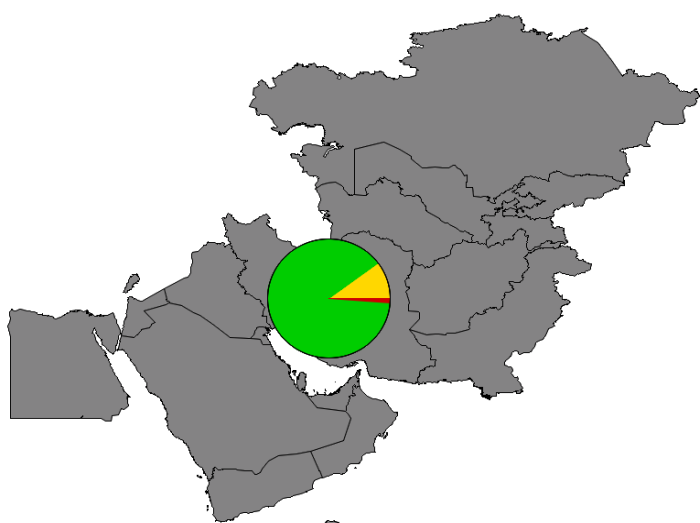


DoD Global, Laboratory-Based, Influenza Surveillance Program

Map 2. Percentage of influenza positives by country for the 2014-2015 surveillance year through Week 17 (Pacific)

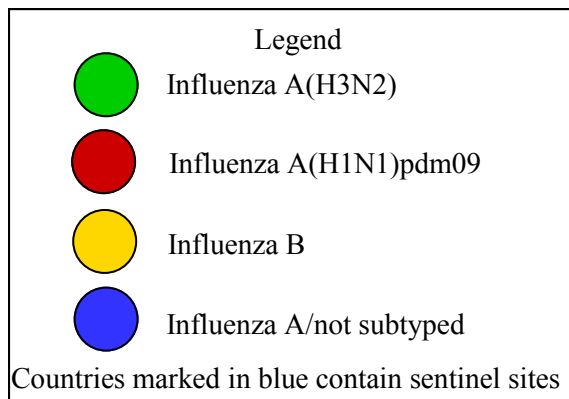


Map 3. Percentage of influenza positives by country for the 2014-2015 surveillance year through Week 17 (CENTCOM)



*Note – Specimens for CENTCOM were tested at USAFSAM or Landstuhl Regional Medical Center (LRMC).

Country	Flu (+)	Flu (-)	% Positive
Country 1	27	82	24.77
Country 2	58	34	63.04
Country 3	2	0	100
Country 6	2	38	5



Monthly EUCOM Respiratory Surveillance Supplemental Report Through 2 May 2015

In cooperation and agreement with U.S. Army Public Health Command Region-Europe (PHCR-E), the DoD Global, Laboratory-based, Influenza Surveillance Program has analyzed data from surveillance sites that submit specimens to Landstuhl Regional Medical Center (LRMC), Germany. LRMC's laboratory is the forward laboratory for military sites in Europe.

Lab results are preliminary and may change as more results are received.

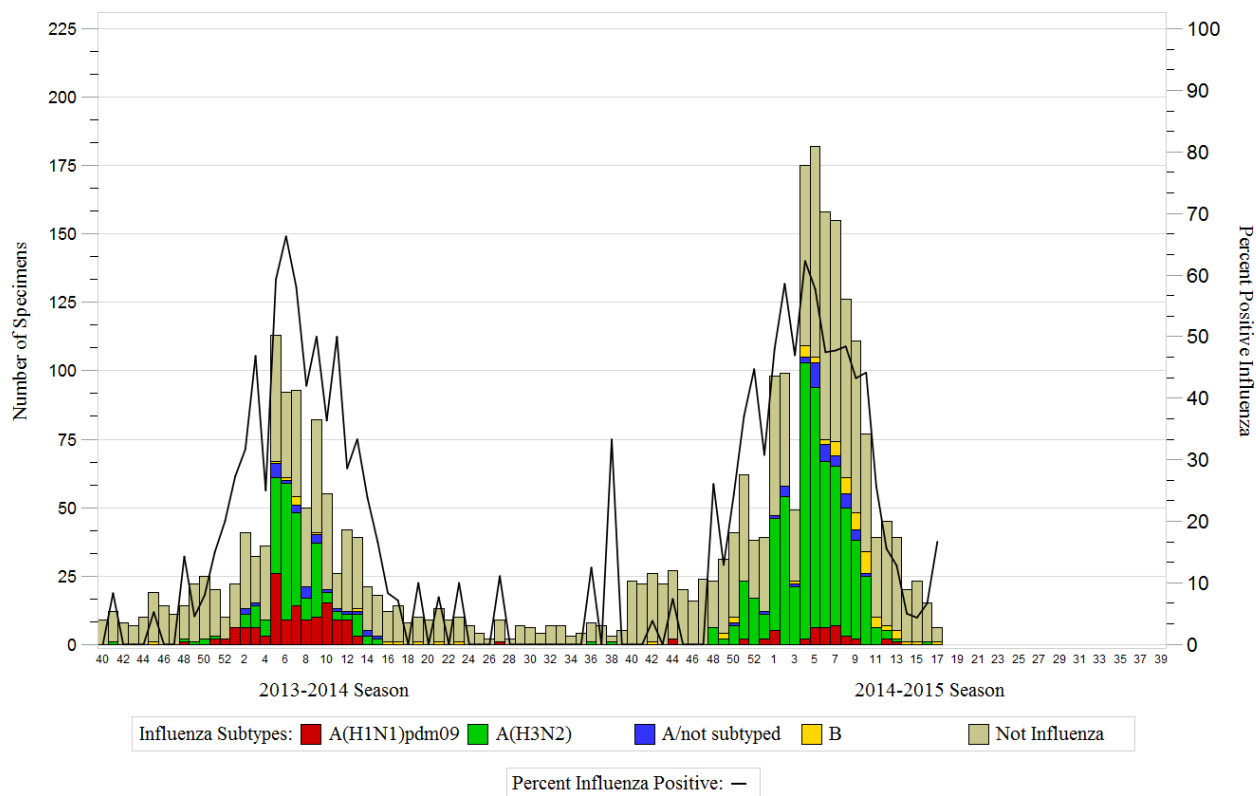
Table 4. Results by region and location for specimens collected and finalized during Week 16 & 17

Region		A(H3N2)	B	hMNv	Parainfluenza	RSV	Rhinovirus/ Enterovirus	Adeno & Rhino/Entero	No Pathogen	Total
EUCOM	Landstuhl RMC, Germany	-	-	1	1	1	-	1	5	9
	NAVSTA Rota, Spain	-	-	-	-	-	-	-	1	1
	RAF Lakenheath, England	1	-	-	-	-	1	-	-	2
	Ramstein AB, Germany	-	-	1	-	-	-	-	-	1
	Spangdahlem AB, Germany	-	-	-	-	-	1	-	1	2
	USAG Stuttgart, Germany	-	1	-	-	-	2	-	1	4
	Vilseck AHC, Germany	-	-	-	1	-	-	-	1	2
Total		1	1	2	2	1	4	1	9	21

Table 5. Cumulative results by region and location for specimens collected during the 2014-2015 surveillance year

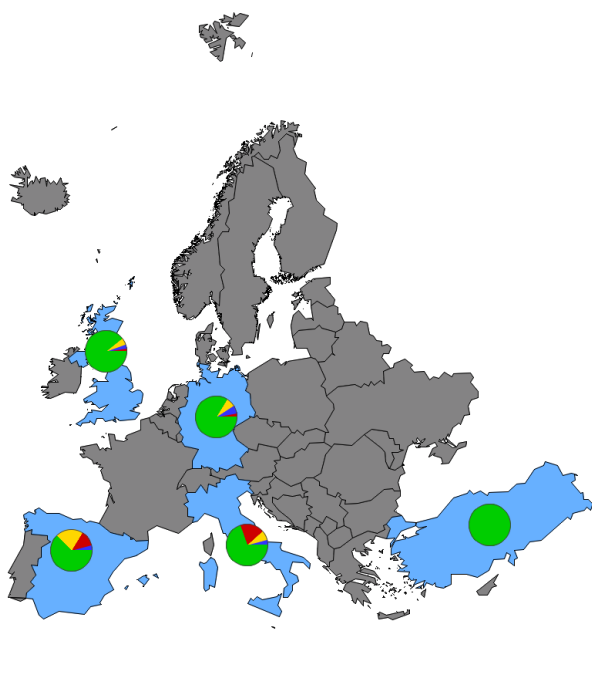
Region		A(H1N1)pdm09	A(H3N2)	A/not subtyped	A/not subtyped & RSV	A/not subtyped & Rhino/Entero	A(H1N1)pdm09 & hMNv	A(H1N1)pdm09 & RSV	A(H3N2) & B	A(H3N2) & hMNv	A(H3N2) & hMNv & Rhino/Entero	A(H3N2) & Para	A(H3N2) & RSV	A(H3N2) & RSV & Rhino/Entero	A(H3N2) & Rhino/Entero	Influenza A & B	B	B & RSV	B & Rhino/Entero	Adenovirus	hMNv	Parainfluenza	RSV	Rhinovirus/Enterovirus	Adeno & RSV	Adeno & RSV & Rhino/Entero	Adeno & Rhino/Entero	hMNv & RSV	hMNv & Rhino/Entero	Para & RSV	Para & Rhino/Entero	RSV & Rhino/Entero	No Pathogen	Total	
Deployed	Country 6, Location A	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	31	39
EUCOM	Aviano AB, Italy	4	12	2	-	-	-	-	1	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	38
	Incirlik AB, Turkey	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	1	2	3	2	3	-	-	1	-	-	-	-	-	10	24
	Landstuhl RMC, Germany	5	108	11	-	1	1	-	-	-	-	-	2	-	-	2	10	-	-	-	1	7	8	46	38	2	1	6	2	-	1	1	7	154	414
	NAS Sigonella, Italy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	2
	NAVSTA Rota, Spain	3	15	-	1	-	-	-	-	-	-	-	-	-	-	-	-	4	-	1	1	2	-	2	5	-	-	1	-	-	-	-	1	33	69
	NSA Naples, Italy	10	10	1	-	-	-	1	-	-	-	-	-	-	-	-	-	3	-	1	-	1	-	8	9	-	-	-	-	-	-	-	1	26	71
	RAF Lakenheath, England	4	131	3	-	2	-	-	-	-	-	1	3	-	9	-	7	1	-	1	6	6	12	46	-	-	1	-	1	1	3	9	138	385	
	Ramstein AB, Germany	1	59	1	-	1	-	-	-	-	-	-	-	-	2	-	2	-	1	-	4	2	17	18	-	-	1	-	-	-	2	1	25	137	
	Spangdahlem AB, Germany	1	21	1	1	-	-	-	-	-	1	-	1	-	2	-	1	-	-	1	4	5	13	6	-	-	-	-	-	-	-	-	3	35	96
	USAG Stuttgart, Germany	1	61	7	-	-	-	-	1	-	-	-	1	-	2	-	8	-	-	-	2	6	8	15	-	-	-	-	-	-	-	-	1	75	188
	USAG Vicenza, Italy	6	51	2	-	-	-	-	-	1	-	-	-	-	4	-	-	-	-	1	-	3	1	-	21	-	-	-	-	-	-	-	-	55	145
	Vilseck AHC, Germany	1	95	4	1	-	2	-	-	-	-	-	4	2	3	-	6	-	2	2	-	2	19	29	-	-	2	-	1	-	-	4	48	227	
Total		36	565	32	2	5	1	3	2	1	1	1	12	2	23	2	44	1	6	7	31	33	127	197	2	1	12	2	2	2	6	27	647	1835	

Graph 5. Percent influenza positive by week: 2013-2014 surveillance year and through Week 17 of the 2014-2015 surveillance year

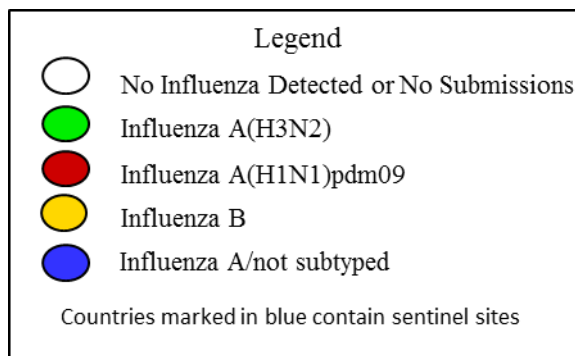


Note: Dual influenza co-infections have been excluded from the graph..

Map 4. Percentage of influenza positive by country for the 2014-15 surveillance year through Week 17 (Europe)



Country	Flu (+)	Flu (-)	% Positive
England	161	224	41.82
Germany	434	625	40.98
Italy	112	143	43.92
Spain	24	45	34.78
Turkey	2	22	8.33



Molecular Sequence Analysis Report USAFSAM Epidemiology Laboratory Service

This is the seventh report for the 2014-2015 season. A total of 133 total specimens collected between 10 December 2014 and 5 February 2015 were subsequently analyzed by USAFSAM. All viruses characterized were influenza A(H3N2). The hemagglutinin (HA) gene from select influenza positives was sequenced using dye terminator, Sanger-based methods. Preliminary data are based on the sequence analysis of the hemagglutinin gene. Antigenic sites, receptor binding sites and glycosylation motifs are predicated upon correlations with previously published experimental evidence.^{1,3,4} Sequence data was constructed and analyzed using multiple software programs. Genetic and predicted antigenic information that resulted from this analysis is shared with United States Centers for Disease Control and Prevention (CDC), World Health Organization (WHO) and potentially contribute to the seasonal Northern and Southern Hemisphere vaccine component selections.

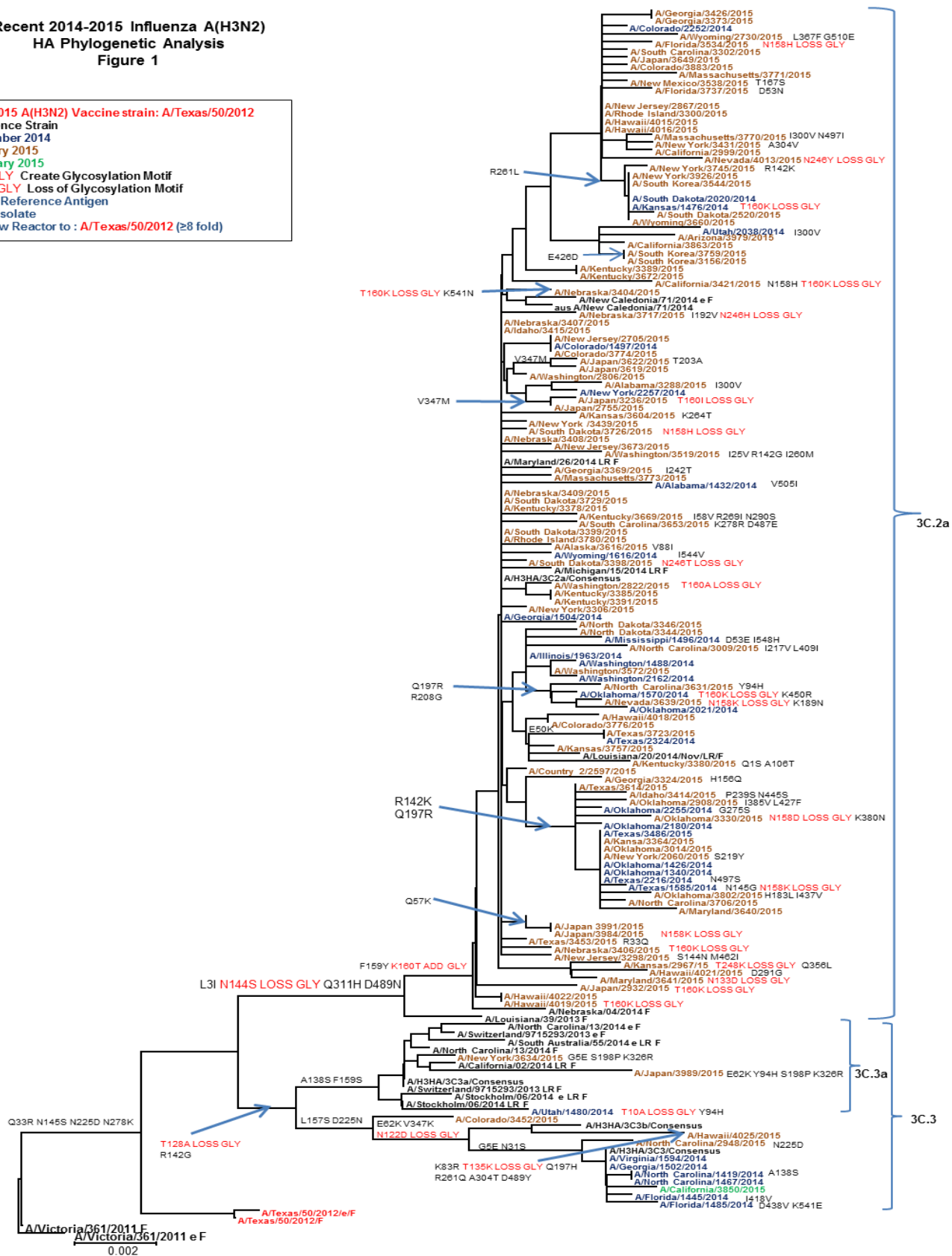
	A(H3N2)
CONUS	
Oklahoma, Altus AFB	2
Virginia, CG Base Portsmouth	1
Alabama, CGS Mobile	1
Mississippi, Columbus AFB	1
Mississippi, Cannon AFB	1
Arizona, Davis-Monthan AFB	1
California, Travis AFB	2
California, Vandenberg AFB	1
Colorado, Dover AFB	4
Colorado, USAF Academy	2
Georgia, Moody AFB	3
Georgia, Robins AFB	3
Florida, Eglin AFB	1
Florida, Tyndall AFB	1
Florida, Hurlburt Field	2
Idaho, Mountain Home	2
Illinois, Scott AFB	1
Arkansas, Eielson AFB	1
Alabama, Maxwell AFB	1
Kentucky, Ft Campbell	7
Kansas, Ft Leavenworth	1
Kansas, McConnell AFB	3
Massachusetts, Hanscom AFB	5
Maryland, JB Andrews	2
Nebraska, Offutt AFB	6
New Jersey, JB McGuire-Dix-Lakehurst	4
New York, Ft Drum	2
New York, USMA – West Point	6
Nevada, Nellis AFB	2
North Carolina, Ft Bragg	3
North Carolina, NH Camp Lejeune	2
North Carolina, Seymour Johnson AFB	1
Oklahoma, Tinker AFB	8
North Dakota, Minot AFB	2
Rhode Island, NHCNE Newport	2
South Carolina, JB Charleston (AF)	1
South Carolina, Shaw AFB	1
South Dakota, Ellsworth AFB	6
Texas, Ft Hood	1
Texas, Laughlin AFB	2
Texas, Sheppard AFB	3
Texas, SAMMC	1
Utah, Hill AFB	2
Washington, Fairchild AFB	1
Washington, NH Bremerton	5
Wyoming, FE Warren AFB	3
OCONUS	
Country 2, Location A	1
Hawaii, Tripler AMC	7
Japan, Kadena AB	1
Japan, Misawa AB	1
Japan, Yokota AB	7
South Korea, Kunsan AB	2
South Korea, Osan AB	1
TOTAL	133

Influenza A(H3N2)

- Isolates are characterized in a neighbor-joining phylogenetic tree with reference strains and other recently sequenced isolates rooted from the previous vaccine, A/Victoria/361/2011-like virus [Figure 1].
- The A(H3N2) specimen characterized for this report by USAFSAM exhibited an overall protein identity of 97.8-98.9% as compared to the A(H3N2) component of the 2013-2014 vaccine formulation, A/Texas/50/2012-like virus.
- Based on the mutations observed, all of the A(H3N2) viruses analyzed belong to clade 3C. Within this clade, 120 (90.2%) classify as group 3C.2a and 13 (9.8%) classify as group 3C.3.
- Gain or loss of *N*-linked glycosylation sites has been shown to alter HA protein surface topology. A gain in glycosylation could be advantageous to the virus by virtue of a masking effect on important antibody recognition sites, thus potentially modulating viral antigenicity.⁴ Observations are based solely on sequence motifs. For the 136 influenza A(H3N2) specimens characterized in this report, There were 16 mutations observed that could cause a loss of a glycosylation motif: T10A (threonine to alanine), N122D (asparagine to aspartic acid), T128A (threonine to alanine), N133D (asparagine to aspartic acid), T135K (threonine to lysine), N144S (asparagine to serine), N158H (asparagine to histidine), N158K (asparagine to lysine), N158D (asparagine to aspartic acid), T160I (threonine to isoleucine), T160A (threonine to alanine), T160K (threonine to lysine), N246H (asparagine to histidine), N246T (asparagine to threonine), N246Y (asparagine to tyrosine), and T248K (threonine to lysine). One mutation, K160T (lysine to threonine), was observed that could cause a gain of a glycosylation motif. The amino acid residues 158 and 160 increasingly seem to be hotspots for variability of glycosylation within the 3C.2a clade.

Recent 2014-2015 Influenza A(H3N2)
HA Phylogenetic Analysis
Figure 1

2014-2015 A(H3N2) Vaccine strain: A/Texas/50/2012
Reference Strain
December 2014
January 2015
February 2015
ADD GLY Create Glycosylation Motif
LOSS GLY Loss of Glycosylation Motif
F CDC Reference Antigen
e Egg Isolate
LR Low Reactor to : A/Texas/50/2012 (≥8 fold)



References:

1. Wright, P, Neumann, G, Kakaoka, Y 2007. Orophomyxoviruses In: Knipe, D.M., Howley, P.M. (Eds.), Fields Virology. Wolters Kluwer, Lippincott Williams & Wilkins, Philadelphia, pp.1692-1740.
2. Kongchanagul A., Suptawiwat, O., Kanrai, P., Uprasertkul, M., Puthavathana, P., and Auewarakul P. (2008) Positive selection at the receptor-binding site of haemagglutinin H5 in viral sequences derived from human tissues. *Journal of Gen. Vir.* 89, 1805-1810.
3. Cherry JL, Lipman DJ, Nikolskaya A, Wolf YI. Evolutionary Dynamics of N-Glycosylation Sites of Influenza Virus Hemagglutinin. *PLoS Curr Influenza*. 2009 August 18: RRN1001.
4. Deem, M., and Pan, K. (2009). The epitope regions of H1-subtype influenza A, with application to vaccine efficacy. *Protein Engineering, Design and Selection*. 22, no. 9. 543-546.
5. Wolf YI, Viboud C, Holmes EC, Koonin EV, Lipman DJ. Long intervals of stasis punctuated by bursts of positive selection in the seasonal evolution of influenza A virus. *Biol Direct*. 2006; 1: 34. Published online 2006 October 26. doi: 10.1186/1745-6150-1-34.

USAFSAM POCs for sequence data and analysis are:

Maj Robel Yohannes: robel.yohannes@us.af.mil

Mr. Bill Gruner: william.gruner.1.ctr@us.af.mil

Mr. Saul Sarria: saul.sarria.ctr@us.af.mil

DoD Global Laboratory-Based Influenza Surveillance Program



USAF School of Aerospace Medicine

2014 - 2015

Respiratory Surveillance
2014-2015 Year
(beginning 28 September 2014)



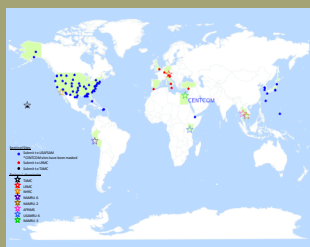
USAF School of Aerospace Medicine

2510 5th Street, Bldg 20840
Wright-Patterson AFB, OH
45433-7913

For Public Health Services
937-938-3196; DSN 798-3196

For Laboratory Services
937-938-3163; DSN 798-3163

E-mail
USAFSAM.PHRFlu@us.af.mil



Contributions to the CDC for National Influenza Surveillance

All sequence data are sent to the CDC and selected original specimens or isolates are sent for further characterization and possible use as influenza vaccine seed viruses. Specimens may also undergo antiviral testing.

[DoD Global Influenza Surveillance Program](https://gumbo2.area52.afnoapps.usaf.mil/epi-consult/influenza)

[https://](https://gumbo2.area52.afnoapps.usaf.mil/epi-consult/influenza)

gumbo2.area52.afnoapps.usaf.mil/epi-consult/influenza

Background

The DoD-wide program was established by the Global Emerging Infections Surveillance and Response System (GEIS) in 1997. The surveillance network includes the U.S. Air Force School of Aerospace Medicine (USAFSAM) (sentinel site respiratory surveillance), the Naval Health Research Center (recruit and shipboard population-based respiratory surveillance), the Naval Medical Research Unit (NAMRU-3) in Cairo, Egypt, the Naval Medical Research Unit (NAMRU-2) in Phnom Penh, Cambodia, the Armed Forces Research Institute of Medical Sciences (AFRIMS) in Bangkok, Thailand, the Naval Medical Research Unit-6 (NAMRU-6) in Lima, Peru, and the United States Army Medical Research Unit-Kenya (USAMRU-K) located in Nairobi, Kenya. This work is supported by the Air Force and the Division of Global Emerging Infections Surveillance and Response System (GEIS) Operations, a Division of the Armed Forces Health Surveillance Center (AFHSC).

Sentinel Site Surveillance at USAFSAM

In 1976, the U.S. Air Force Medical Service began conducting routine, global, laboratory-based influenza surveillance. Air Force efforts expanded to DoD-wide in 1997. USAFSAM manages the surveillance program that includes global surveillance among DoD beneficiaries at over 80 sentinel sites (including deployed locations) and many non-sentinel sites (please see map on the left). Unique sentinel sites include three DoD overseas medical research laboratories (AFRIMS, NAMRU-6, USAMRU-K) and the US Army Public Health Command Region South (PHCR-S). These sites collect specimens from local residents in surrounding countries that may not otherwise be covered in existing surveillance efforts.

Since the 2006-2007 season, Landstuhl Regional Medical Center (LRMC) has served EUCOM as a USAFSAM contributing laboratory. The initiative seeks to provide more timely results and efficient transport of specimens.

For an expanded view of this report, visit our website. Also available on the website is a list of previous weekly surveillance reports, program information (including an educational briefing and instruction pamphlets for clinic staff), and an overview of historical data. Please visit the AFHSC/GEIS website for an overview of influenza surveillance at all collaborating organizations.

Errata:

Collaborating Partners

In addition to all participating DoD military sentinel sites, several collaborating partners (described above) may be further understood by reviewing the partner's website.



Distribution Statement A: Distribution is unlimited. 88ABW-2015-2375, 13 May 2015.

Email: USAFSAM.PHRFlu@us.af.mil, <https://gumbo2.area52.afnoapps.usaf.mil/epi-consult/influenza>