

DoD Global, Laboratory-Based, Influenza Surveillance Program



USAF School of Aerospace Medicine

2014 - 2015

Cumulative Results

Locations	89
Collected	5,988
Tested	5,924

Influenza A 1,792

A(H1N1)pdm09	3
A(H3N2)	1,784
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 257

B/Unknown or pending lineage*	139
B & Rhino/Enterovirus	1
B/Victoria	34
B/Yamagata	83

Other Respiratory Pathogens 1,100

Adenovirus	123
<i>Bordetella pertussis</i>	0
<i>Chlamydia pneumoniae</i>	2
Coronavirus	89
Human Metapneumovirus	69
<i>Mycoplasma pneumoniae</i>	34
Parainfluenza	172
RSV	207
Rhino/Enterovirus	284
Non-influenza Co-infections	120

Lab data are current as of 6 July 2015. Results are preliminary and may change as more results are received.
*USAFSAM does not sequence all influenza B specimens to determine lineage.



Respiratory Highlights

31 May - 4 July 2015 (Surveillance Weeks 22-26)

- During 31 May - 4 July 2015, a total of 87 specimens were collected and received from 36 locations. Results were finalized for 80 specimens from 35 locations. A total of three influenza viruses were identified. During Week 22, one influenza A(H3N2) and one influenza B/Victoria virus were identified. During Week 23, one influenza B/Yamagata virus was identified. There were no influenza viruses identified during Weeks 24 through 26.
- This report contains the latest molecular sequence report (#11). The sequences reported are from USAFSAM sentinel sites. The report can be found on pages 10-15.

Table 1. Results by region and location for specimens collected and finalized during Weeks 22-26

Region*		A(H3N2)	B/Victoria	B/Yamagata	Adenovirus	Coronavirus	hMPV	M. pneumoniae	Parainfluenza	Rhinovirus/Enterovirus	Adeno & Rhino/Enterovirus	hMPV & Rhino/Enterovirus	No Pathogen	Total
PACOM	JR Marianas - Andersen AFB, Guam	-	-	-	1	-	-	-	-	-	-	-	-	1
	Misawa AB, Japan	-	-	-	-	-	-	-	-	-	-	-	2	2
	Osan AB, South Korea	-	-	-	-	-	-	-	-	-	1	-	-	1
	Yokota AB, Japan	-	-	-	-	-	-	-	-	-	-	-	1	1
		-	-	-	-	-	-	-	-	-	-	-	-	-
Region 1	Hanscom AFB, MA	-	-	-	-	-	-	-	-	-	-	-	2	2
Region 2	JB McGuire-Dix-Lakehurst, NJ	-	-	-	-	-	-	-	-	-	-	-	2	2
	USMA - West Point, NY	-	-	-	-	-	-	-	-	2	-	-	1	3
Region 3	Dover AFB, DE	-	-	-	-	-	-	-	-	-	-	-	1	1
	JB Langley-Eustis, VA	-	-	-	1	-	-	-	1	-	-	-	-	2
Region 4	CGS Mobile, AL	-	-	-	-	-	-	-	-	-	-	-	3	3
	Eglin AFB, FL	-	-	-	-	-	-	-	-	1	-	-	1	2
	Hurlburt Field, FL	-	-	-	-	-	-	-	-	-	-	-	1	1
	Keesler AFB, MS	-	-	-	2	-	-	-	-	-	-	-	1	3
	MacDill AFB, FL	-	-	-	-	-	-	-	-	-	-	-	1	1
	Maxwell AFB, AL	-	-	-	-	-	-	1	1	-	-	-	-	2
	Moody AFB, GA	-	-	-	1	-	-	-	1	-	-	-	-	2
	Robins AFB, GA	-	-	-	-	-	-	-	-	-	-	-	1	1
	Tyndall AFB, FL	-	-	-	-	-	-	-	-	-	-	-	1	1
		-	-	-	-	-	-	-	-	-	-	-	-	-
Region 5	Scott AFB, IL	-	-	-	-	-	-	-	-	-	-	-	2	2
	Wright-Patterson AFB, OH	-	-	-	-	-	-	-	-	-	-	-	1	1
Region 6	Cannon AFB, NM	-	-	-	-	-	-	-	-	1	-	-	1	2
	Laughlin AFB, TX	-	-	-	1	-	-	-	-	-	-	-	-	1
	Sheppard AFB, TX	-	-	-	-	-	1	-	1	-	-	-	2	4
	Tinker AFB, OK	-	-	-	-	-	-	-	-	1	-	-	-	1
Region 7	Offutt AFB, NE	1	-	-	-	-	-	-	-	-	-	-	4	5
Region 8	Ellsworth AFB, SD	-	-	-	-	-	-	-	-	-	-	-	2	2
	FE Warren AFB, WY	-	-	-	1	-	-	-	-	-	-	-	-	1
	Hill AFB, UT	-	-	-	-	-	-	-	1	-	-	-	2	3
	Peterson AFB, CO	-	-	-	-	-	1	-	-	-	-	-	-	1
	USAF Academy, CO	-	-	-	-	-	-	-	-	1	-	-	-	1
		-	-	-	-	-	-	-	-	-	-	-	-	-
Region 9	Edwards AFB, CA	-	-	-	-	-	-	-	-	-	-	-	2	2
	Nellis AFB, NV	-	-	1	1	-	-	-	-	-	-	-	-	2
	Travis AFB, CA	-	1	-	-	-	-	-	-	-	-	-	3	4
Region 10	CGS North Bend, OR	-	-	-	-	1	-	-	-	-	-	-	-	1
	NH Bremerton, WA	-	-	-	1	-	1	-	-	3	-	1	10	16
Total		1	1	1	9	1	3	1	5	9	1	1	47	80

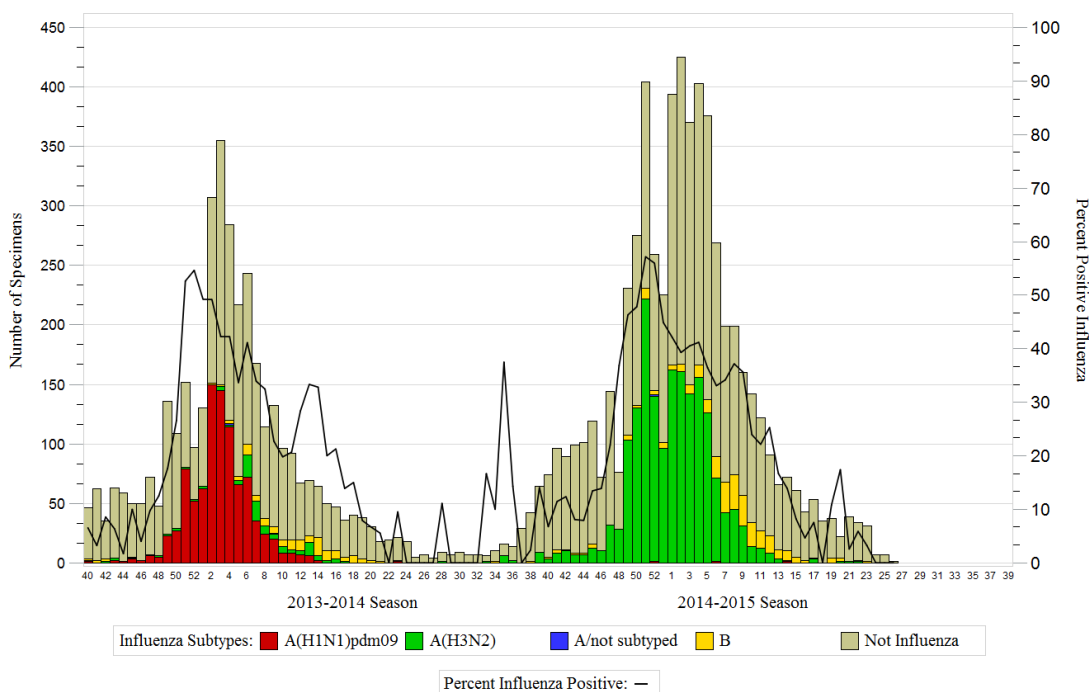
*US Regions are based on Health & Human Services regions. Other locations are defined by COCOM.

Distribution Statement A: Distribution is unlimited. 88ABW-2015-2196 and PA email guidance dated 1 May 2015.

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

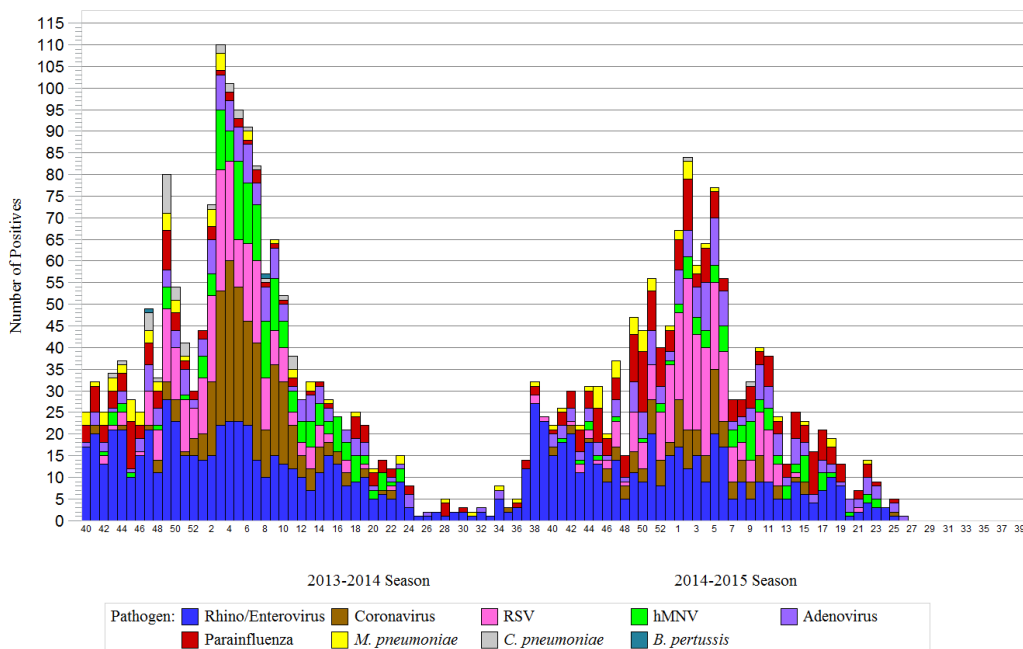
Laboratory Results - Cumulative for Season

Graph 1. Percent influenza positive by week: 2013-2014 surveillance year and through Week 26 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 26 of the 2014-2015 surveillance year

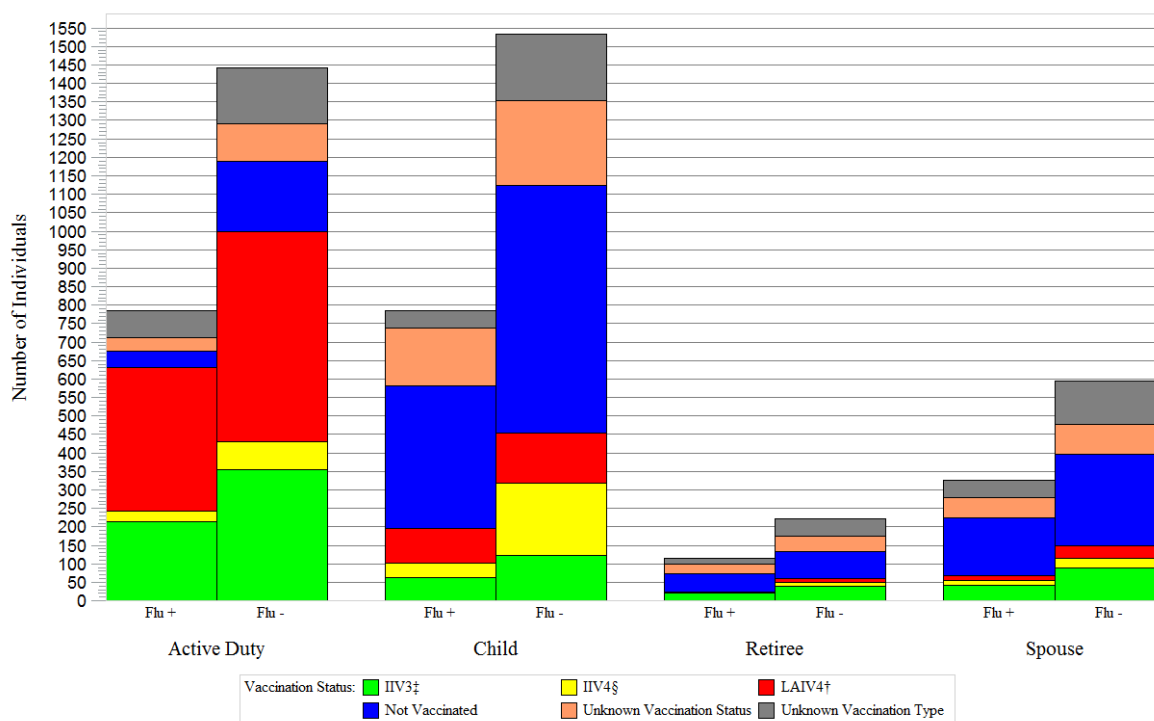


Note: Due to change in protocol between the surveillance years, 2013-2014 and 2014-2015, a direct comparison between the years cannot be made.

Distribution Statement A: Distribution is unlimited. 88ABW-2015-2196 and PA email guidance dated 1May2015.

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 26



‡ Influenza, inactivated vaccine (trivalent)

§ Influenza, inactivated vaccine (quadrivalent)

† Live, attenuated influenza vaccine (quadrivalent)

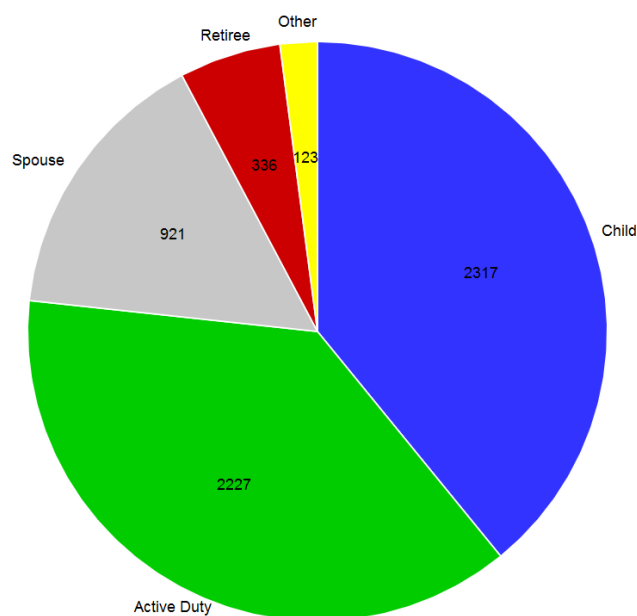
Table 2. ILI by age group for the 2014-2015 surveillance year through Week 26

Age Group	Frequency	Percent
0-5	1294	21.84
6-9	448	7.56
10-17	577	9.74
18-24	842	14.21
25-44	1971	33.27
45-64	605	10.21
65+	176	2.97
Unknown	11	0.19

Demographic Summary

Of 5,924 ILI cases, 2,227 are service members (37.6%), 2,317 are children (39.1%), 921 (15.5%) are spouses, and 459 (7.8%) are retirees & other beneficiaries. The median age of ILI cases with known age (n=5,913) is 23 (range 0, 95) and 2,319 (39.2%) 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 26



Laboratory Results—Through Current Surveillance Week 26

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	-	-	-	-	-	-	-	-	18	3	52	107
	Country 2, Location A	1	48	-	-	-	1	-	1	-	7	-	-	-	-	-	-	-	-	6	1	29	94
	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	-	6	-	-	3	-	1	3	5	1	26	61
	JR Marianas - NH Guam, Guam	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
	Kadena AB, Japan	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	7	14
	Kunsan AB, South Korea	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	12
	Misawa AB, Japan	-	10	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2	-	13	26
	Osan AB, South Korea	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	8	24
	Tripler AMC, HI	-	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
	Yokota AB, Japan	-	80	-	-	-	-	-	-	-	-	2	-	2	-	2	4	-	1	-	4	1	27
Region 1	Hanscom AFB, MA	-	24	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	3	1	-	29	58
	NHCNE Newport, RI	-	16	-	-	-	-	-	1	2	3	-	2	-	-	-	-	1	2	1	2	23	53
	USCG Academy, CT	-	10	-	-	-	-	-	1	-	-	-	1	-	-	-	1	1	-	2	1	11	28
Region 2	CGAS Borinquen, PR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
	Ft Drum, NY	-	64	-	-	-	-	-	13	-	9	-	5	-	5	5	1	4	10	19	10	59	204
	JB McGuire-Dix-Lakehurst, NJ	-	32	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	2	5	1	30	73
	USMA - West Point, NY	1	95	-	-	-	-	8	-	2	-	5	-	9	2	4	7	12	10	8	156	319	
Region 3	CG Base Portsmouth, VA	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
	Dover AFB, DE	-	21	-	-	-	-	-	-	-	1	-	-	-	1	1	1	1	-	-	-	19	45
	JB Anacostia-Bolling, DC	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	5
	JB Andrews, MD	-	4	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	2	-	4	12
	JB Langley-Eustis, VA	-	7	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	-	1	12	24
	NCRM - Ft Belvoir CH, VA	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	4	1	4	11
	NCRM - Walter Reed NMMC, MD	-	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	4
NMC Portsmouth, VA	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	2	3	
Region 4	CGS Mobile, AL	-	11	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	2	-	8	22
	Columbus AFB, MS	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	26
	Eglin AFB, FL	-	14	-	-	-	-	-	3	-	2	-	2	-	-	-	1	4	6	3	4	57	96
	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	40	81
	JB Charleston (AF), SC	-	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	14
	JB Charleston (Navy), SC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2	-	2	5
	Keesler AFB, MS	-	6	-	-	-	-	-	-	1	1	-	7	-	-	-	-	1	2	1	2	29	50
	MacDill AFB, FL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	11
	Maxwell AFB, AL	-	31	-	-	-	-	-	10	-	5	-	2	-	2	1	1	2	1	5	-	80	140
	Moody AFB, GA	-	92	-	-	-	-	5	3	3	-	16	-	8	9	1	13	5	17	9	101	282	
	NH Beaufort, SC	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	2	1	15	21
	NH Camp Lejeune, NC	-	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	11	76
	NH Jacksonville, FL	-	1	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	4	1	-	8
	Patrick AFB, FL	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
	Robins AFB, GA	-	35	-	-	-	-	-	3	-	2	-	1	-	3	1	-	-	-	-	-	42	87
	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	-	1	2	1	1	16	44
	USCG Base Elizabeth City, NC	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Continued on Page 5

Laboratory Results—Through Current Surveillance Week 26

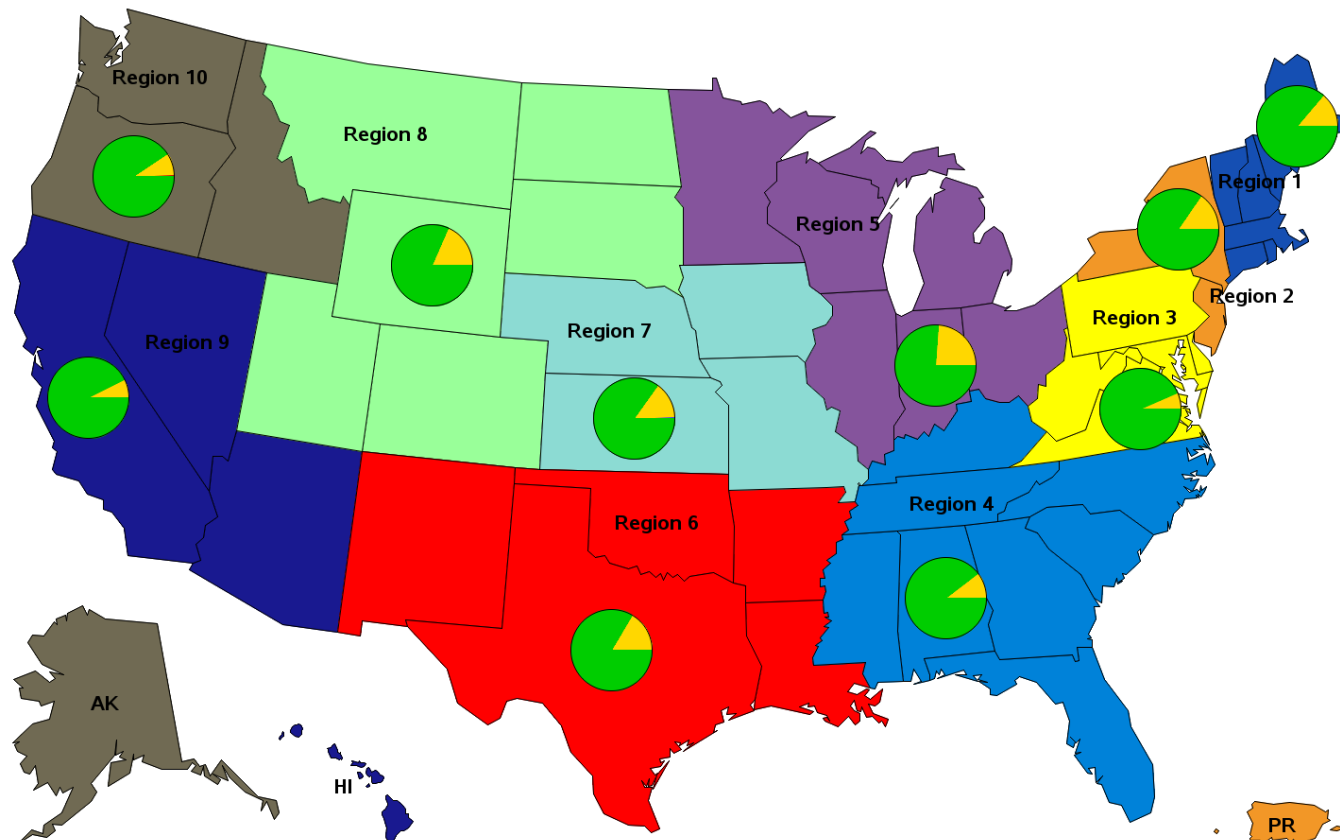
Table 3. Cumulative results by region and location for specimens collected during the 2014-2015 surveillance year (Continued from Page 4)

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	-	-	-	-	-	6	1	4	-	2	-	1	1	-	2	2	2	-	37	81
	Wright-Patterson AFB, OH	-	12	-	-	-	-	-	-	-	-	-	-	-	4	1	-	-	4	8	-	39	68
Region 6	Altus AFB, OK	-	16	-	-	-	-	-	4	-	2	1	3	-	1	-	-	6	7	3	2	117	162
	Barksdale AFB, LA	-	10	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	1	11	24
	Cannon AFB, NM	-	4	-	-	-	-	-	1	-	-	-	-	-	1	-	-	1	1	3	-	13	24
	Ft Hood, TX	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
	Holloman AFB, NM	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5
	Laughlin AFB, TX	-	9	-	-	-	-	-	-	-	-	-	3	-	1	-	2	2	3	6	3	16	45
	Little Rock AFB, AR	-	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	34	53
	SAMMC, TX	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
	Sheppard AFB, TX	-	69	-	-	-	-	-	4	3	1	-	3	-	6	3	1	6	5	6	7	106	220
	Tinker AFB, OK	-	123	-	1	-	-	-	26	6	1	-	2	1	5	7	1	12	22	13	8	189	417
	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	2	-	2	-	-	-	3	-	-	1	-	4	-	28	80
	Offutt AFB, NE	-	69	-	-	-	-	-	9	-	6	-	3	-	5	-	2	8	1	11	1	144	259
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Region 8	Buckley AFB, CO	-	2	-	-	-	-	-	1	2	-	-	-	-	1	-	-	-	1	1	-	9	17
	Ellsworth AFB, SD	-	30	-	-	-	-	-	12	2	4	-	2	-	5	1	4	7	1	3	2	42	115
	FE Warren AFB, WY	-	35	-	-	-	-	-	8	4	-	-	3	-	-	-	-	15	3	3	2	38	111
	Hill AFB, UT	-	34	-	-	-	-	-	-	-	2	-	-	-	-	-	2	4	4	8	2	36	92
	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	-	-	-	-	-	1	2	3	-	-	-	-	1	1	4	3	4	2	39	110
	USAF Academy, CO	-	26	-	-	-	-	-	2	1	-	-	-	-	-	-	1	1	-	2	-	31	64
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Region 9	Beale AFB, CA	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
	Davis-Monthan AFB, AZ	-	26	-	-	-	-	-	-	-	2	-	1	-	2	4	-	2	1	2	1	46	87
	Edwards AFB, CA	-	8	-	-	-	-	-	1	1	1	-	-	-	-	-	-	3	-	-	-	14	28
	Los Angeles AFB, CA	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Luke AFB, AZ	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	14	28
	Nellis AFB, NV	-	19	-	-	-	-	-	1	2	2	-	2	-	-	-	-	-	2	2	-	26	56
	Travis AFB, CA	-	56	-	-	-	-	-	1	1	-	-	1	-	2	2	2	12	18	13	3	206	317
	USCG Island Alameda, CA	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	8
	Vandenberg AFB, CA	-	6	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	20	28
Region 10	CGS North Bend, OR	-	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	1	5
	Fairchild AFB, WA	-	22	-	-	-	-	-	1	-	1	-	1	-	2	2	-	1	7	1	1	11	50
	Mt Home AFB, ID	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	-	-	8	22
	NH Bremerton, WA	1	87	-	-	-	-	-	7	-	2	-	18	1	4	7	4	25	39	37	21	370	623
Total		3	1784	1	1	1	1	1	139	34	83	1	123	2	89	69	34	172	207	284	120	2775	5924

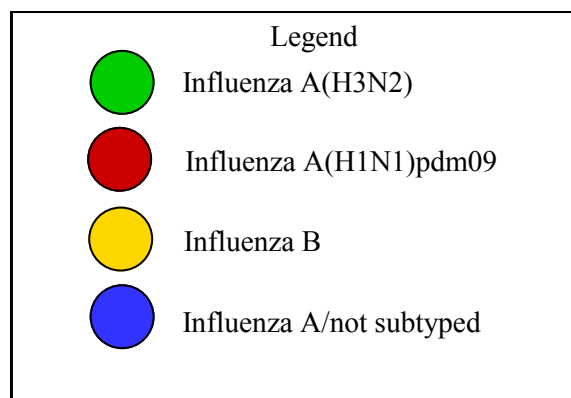
*US Regions are based on Health & Human Services regions. Other locations are defined by COCOM.

DoD Global, Laboratory-Based, Influenza Surveillance Program

Map 1. Percentage of influenza positives by Health & Human Service regions for the 2014-2015 surveillance year

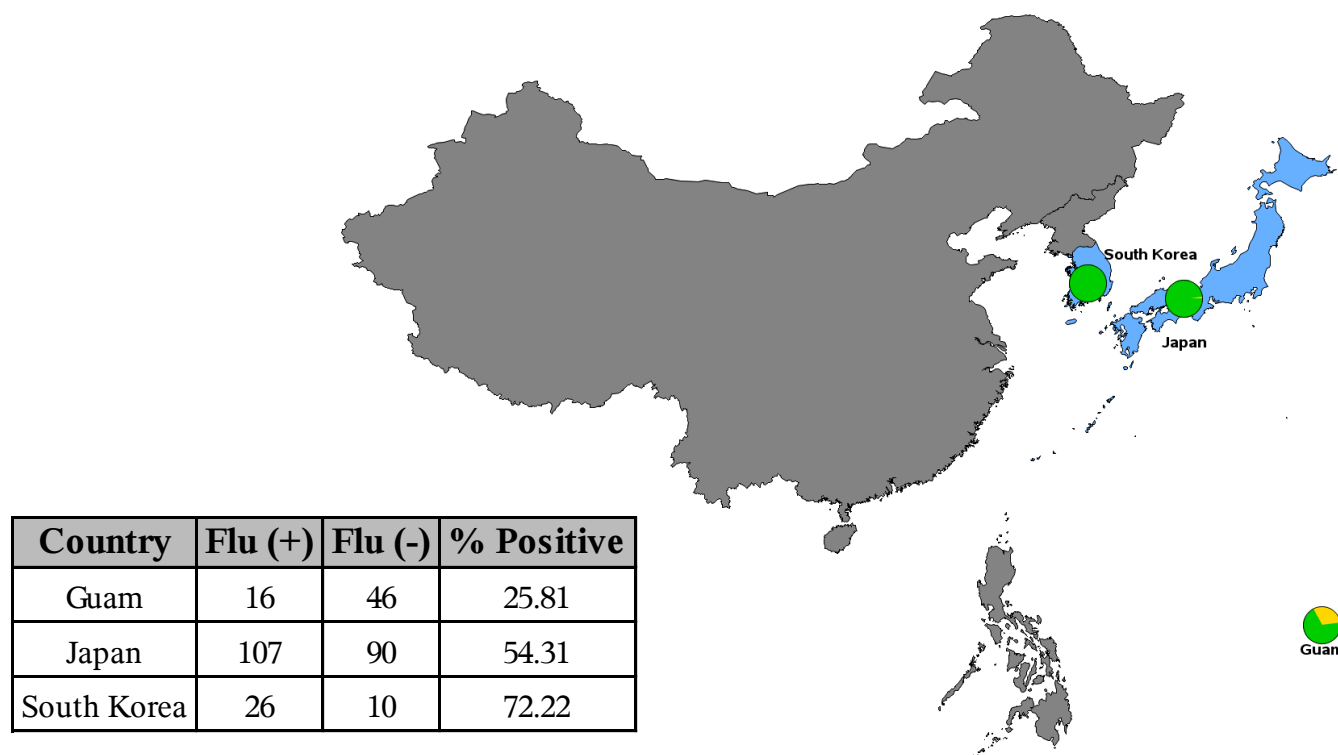


Region	Flu (+)	Flu (-)	% Positive
Region 1	58	81	41.73
Region 2	227	370	38.02
Region 3	46	63	42.2
Region 4	440	767	36.45
Region 5	46	103	30.87
Region 6	306	654	31.88
Region 7	132	231	36.36
Region 8	245	357	40.7
Region 9	163	412	28.35
Region 10	148	584	20.22

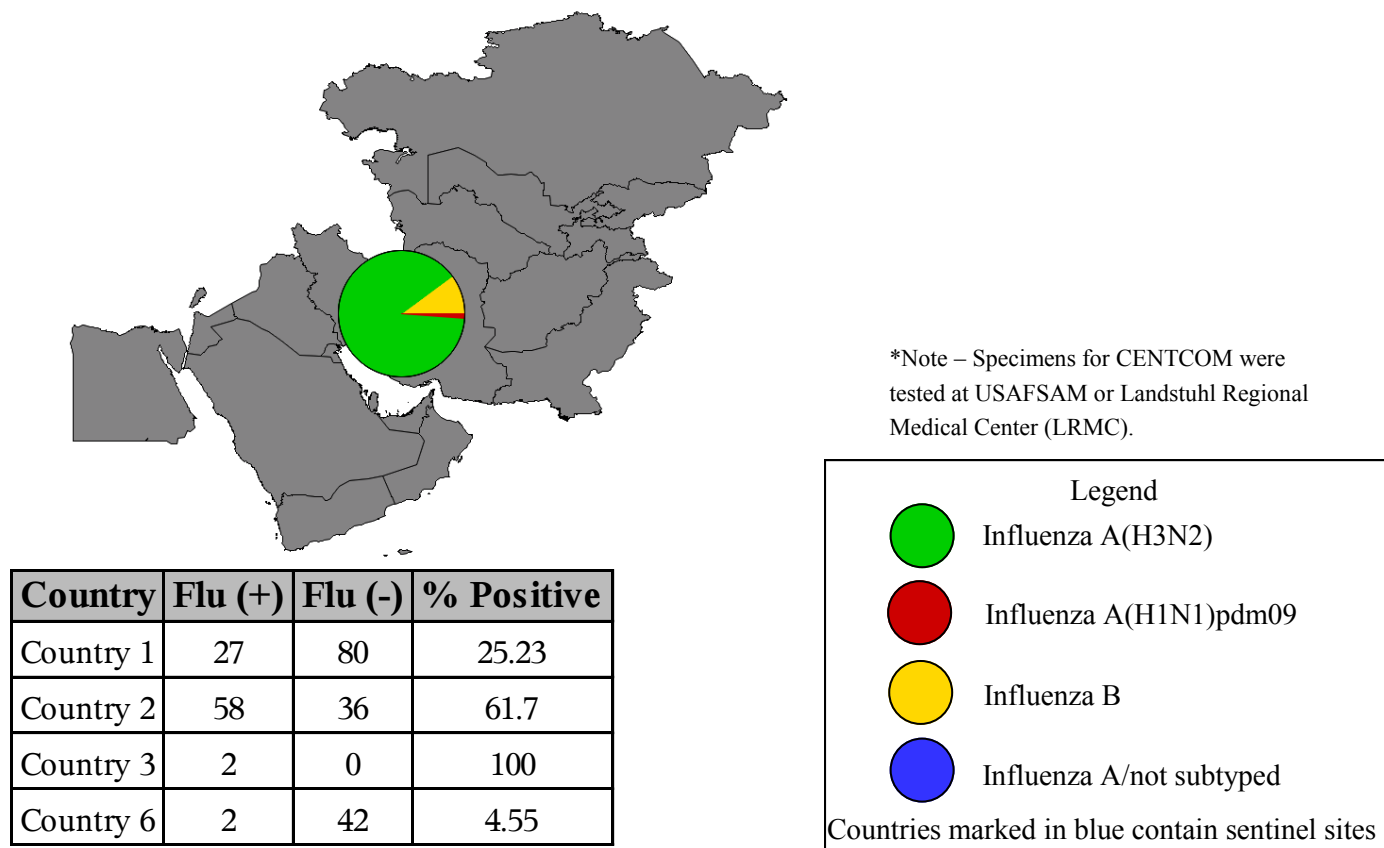


DoD Global, Laboratory-Based, Influenza Surveillance Program

Map 2. Percentage of influenza positives by country for the 2014-2015 surveillance year through Week 26 (Pacific)



Map 3. Percentage of influenza positives by country for the 2014-2015 surveillance year through Week 26 (CENTCOM)



Monthly EUCOM Respiratory Surveillance Supplemental Report Through 4 July 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 Weeks 22-26

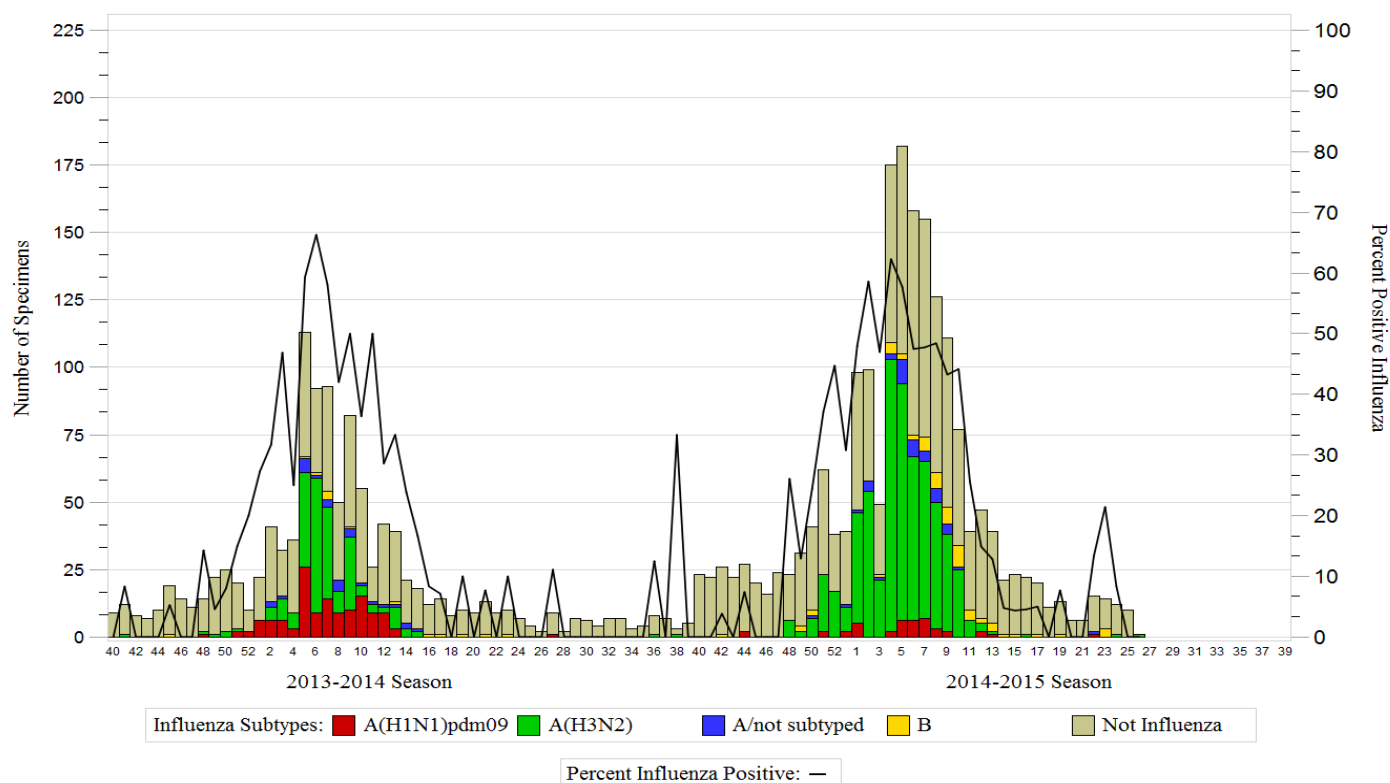
Region		A(H1N1)pdm09	A(H3N2)	A/not subtyped & Rhino/Entero	B	Adenovirus	hMNV	Parainfluenza	Rhinovirus/Enterovirus	Adeno & Rhino/Entero	Para & Rhino/Entero	No Pathogen	Total
EUCOM	Incirlik AB, Turkey	-	-	-	-	-	-	2	-	-	-	-	2
	Landstuhl RMC, Germany	-	1	-	-	-	-	1	2	-	1	11	16
	RAF Lakenheath, England	1	1	1	3	1	1	1	5	-	-	13	27
	Ramstein AB, Germany	-	-	-	-	-	-	-	-	-	-	1	1
	Spangdahlem AB, Germany	-	-	-	-	-	-	-	-	1	-	-	1
	USAG Stuttgart, Germany	-	-	-	-	-	-	-	-	-	-	1	1
	Vilseck AHC, Germany	-	-	-	-	-	-	1	2	-	-	1	4
Total		1	2	1	3	1	1	5	9	1	1	27	52

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																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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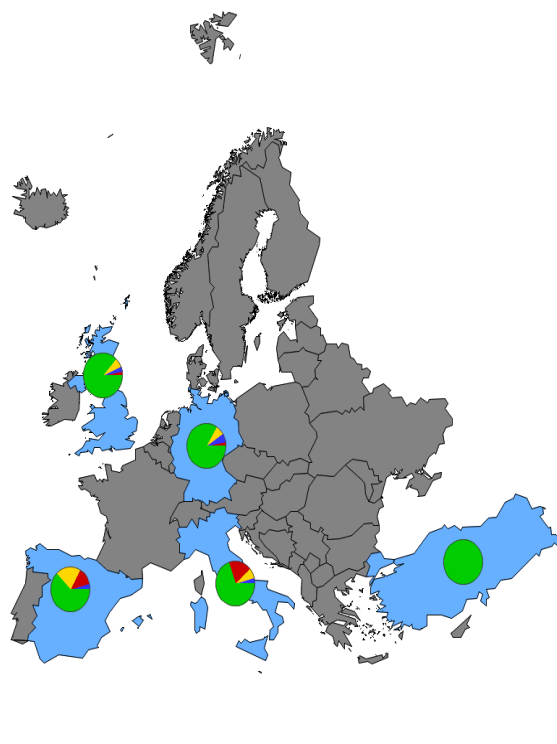
DoD Global, Laboratory-Based, Influenza Surveillance Program

Graph 5. Percent influenza positive by week: 2013-2014 surveillance year and through Week 26 of the 2014-2015 surveillance year

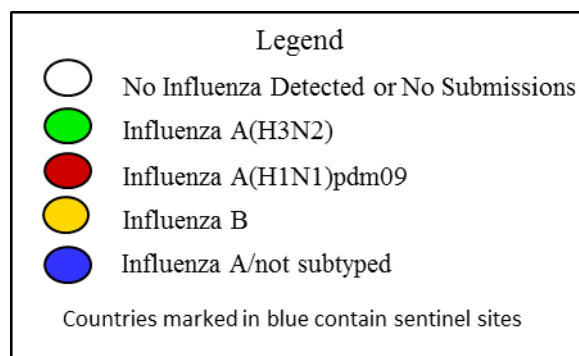


Note: Dual influenza co-infections have been excluded from the graph..

Map 4. Percentage of influenza positive by country for the 2014-2015 surveillance year through Week 26 (Europe)



Country	Flu (+)	Flu (-)	% Positive
England	168	258	39.44
Germany	435	672	39.30
Italy	112	151	42.59
Spain	24	46	34.29
Turkey	2	32	5.88



Molecular Sequence Analysis Report
USAFSAM Epidemiology Laboratory Service

This is the 11th report for the 2014-2015 season. Of the 20 total specimens analyzed (collected between 12 February and 10 June 2015), five (25%) were influenza A(H3N2) viruses, two (10%) were influenza A(H1N1)pdm09 viruses, nine (45%) were influenza B/Yamagata viruses, and four (20%) were influenza B/Victoria virus specimens.

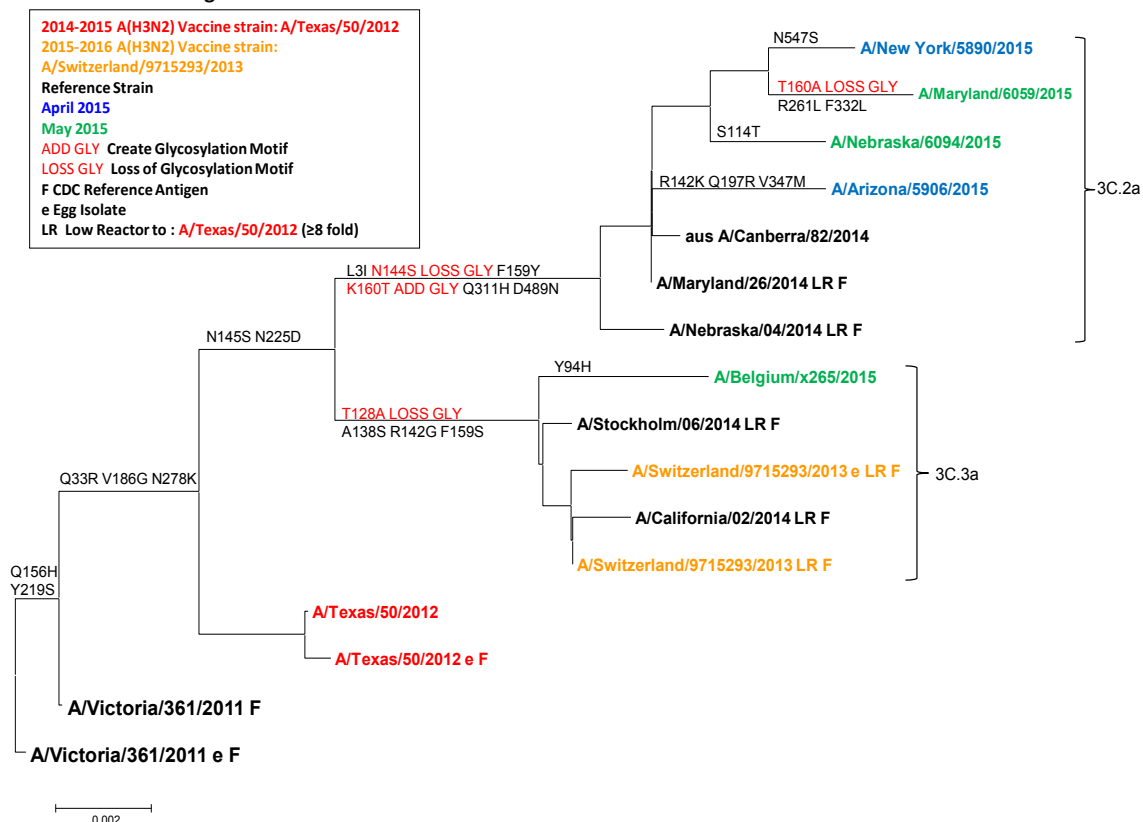
	A(H3N2)	A(H1N1)pdm09	B/Yamagata	B/Victoria
CONUS Arizona, Davis-Monthan AFB	1			
California, Travis AFB				1
Colorado, Peterson AFB			1	
Georgia, Moody AFB			1	
Maryland, NCRM – Walter Reed NMMC	1			
Nebraska, Offutt AFB	1			
Nevada, Nellis AFB			1	1
New York, USMA – West Point	1	1		
Rhode Island, NHCNE Newport				2
OCONUS Belgium, Shape AHC	1			
Country 2, Location A		1		
Germany, Landstuhl RMC			4	
England, RAF Lakenheath			1	
Italy, Aviano AB			1	
TOTAL	5	2	9	4

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.

Influenza A(H3N2)

- Isolates are characterized in a neighbor-joining phylogenetic tree with reference strains rooted from the previous vaccine, A/Victoria/361/2011-like virus [Figure 1].
- The influenza A(H3N2) specimens characterized for this report exhibited an overall protein identity of 97.5-98.4% as compared to the influenza A(H3N2) component of the 2013-2014 vaccine formulation, A/Texas/50/2012-like virus.
- Based on the mutations observed, all of the influenza A(H3N2) viruses analyzed belong to clade 3C. Four of the specimens can be further classified as clade 3C.2a and one as clade 3C.3a.
- 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 influenza A(H3N2) specimens characterized in this report, three mutations were observed that could cause a loss of a glycosylation motif: T128A (threonine to alanine), N144S (asparagine to serine), and T160A (threonine to alanine). One mutation, K160T (lysine to threonine), was observed that could cause a gain of a glycosylation motif.
- Of the 23 mutations present in the influenza A(H3N2) specimens, 10 occurred at predicted antigenic sites and three at the receptor binding site.^{2,5} Of the 18 mutations present in the influenza A(H3N2) specimens, nine occurred at predicted antigenic sites and two occurred at the receptor binding site.^{2,5}

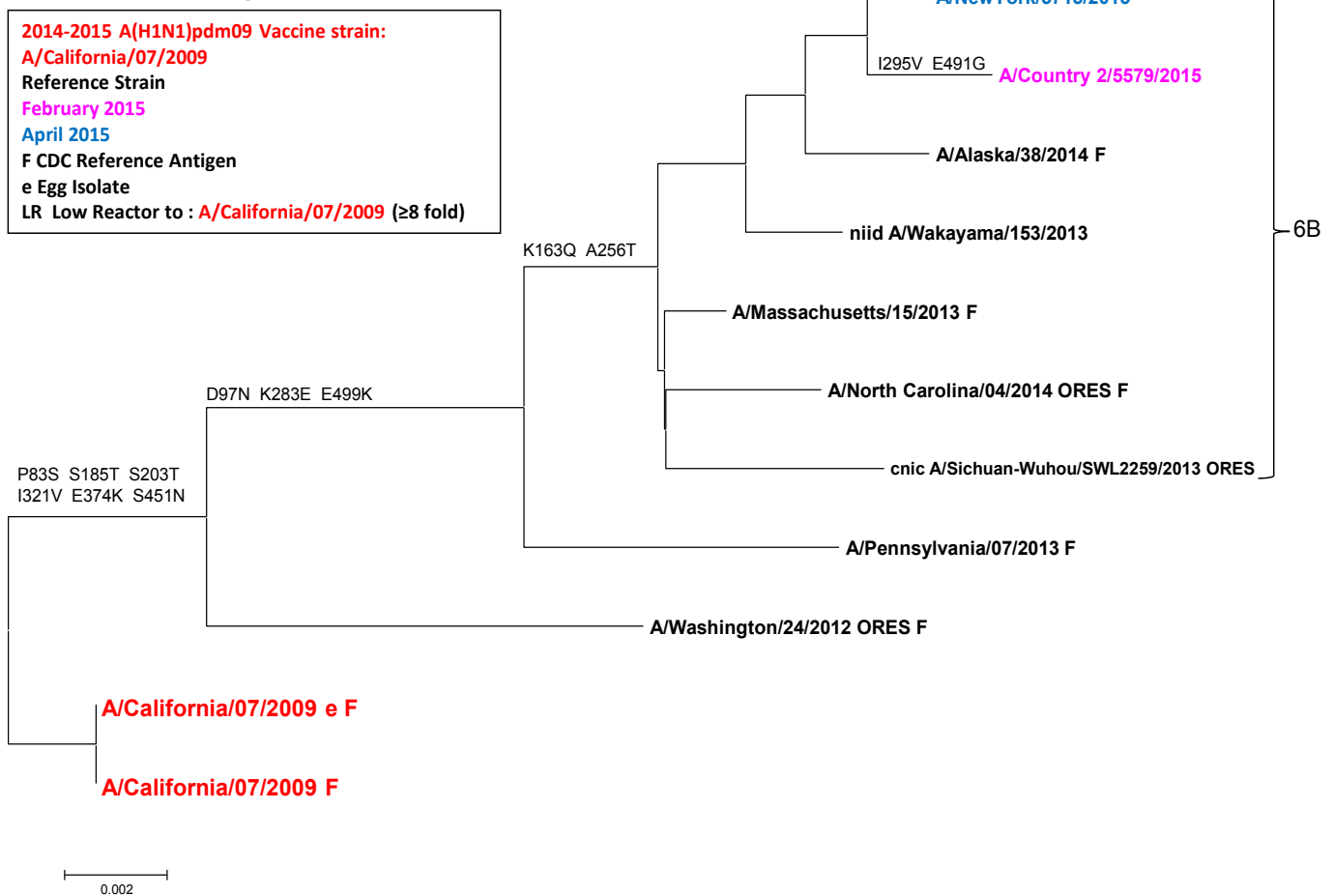
Recent 2014-2015 Influenza A(H3N2) HA
Phylogenetic Analysis
Figure 1



Influenza A(H1N1)pdm09

- The sequences are characterized in a neighbor-joining phylogenetic tree with reference strains rooted from the current vaccine strain, A/California/07/2009-like virus [Figure 2].
- The influenza A(H1N1)pdm09 specimens characterized for this report exhibited an overall protein identity of 97.5-97.8% compared to A/California/07/2009-like vaccine strain.
- Both of the influenza A(H1N1)pdm09 viruses sequenced for this report contain mutations consistent with one of the circulating subgroup, referred as group 6B. Isolates of this group share two distinguishing mutations, K163Q (lysine to glutamine), and A256T (alanine to threonine).
- Of the 15 mutations present in the influenza A(H1N1)pdm09 specimens, five occurred at predicted antigenic sites and three at the receptor binding site.^{2,5}

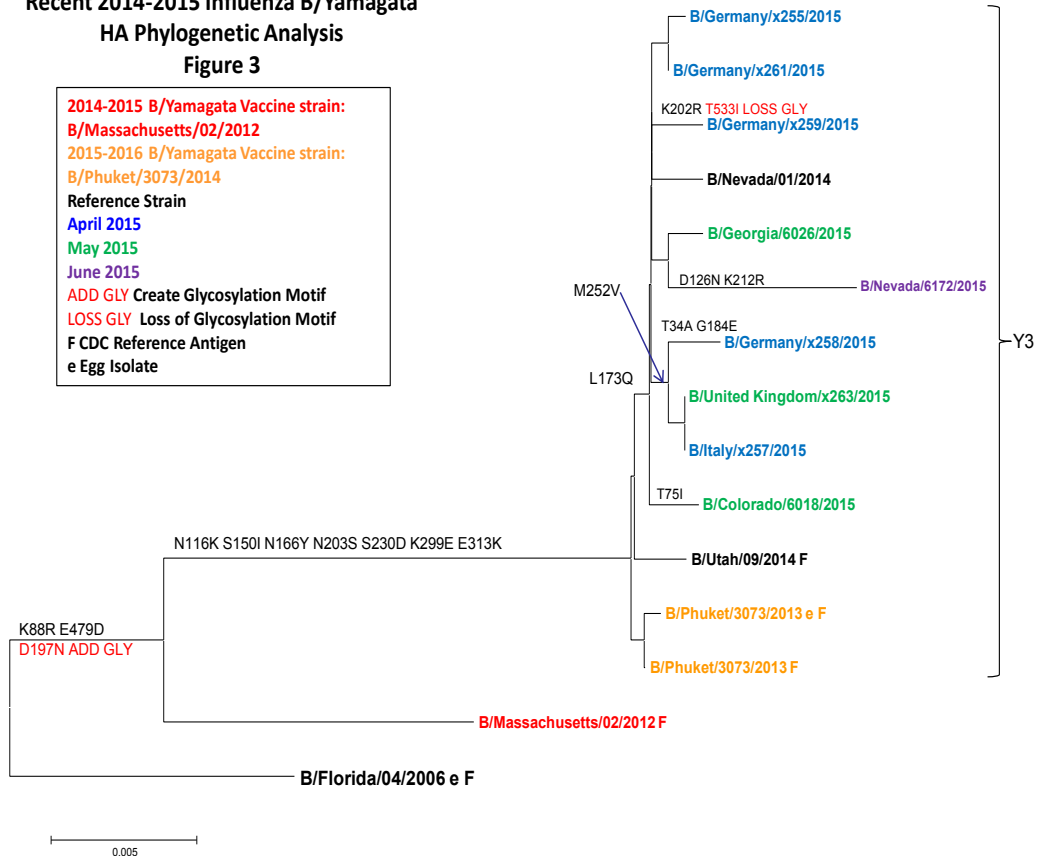
Recent 2014-2015 Influenza A(H1N1)pdm09 HA Phylogenetic Analysis Figure 2



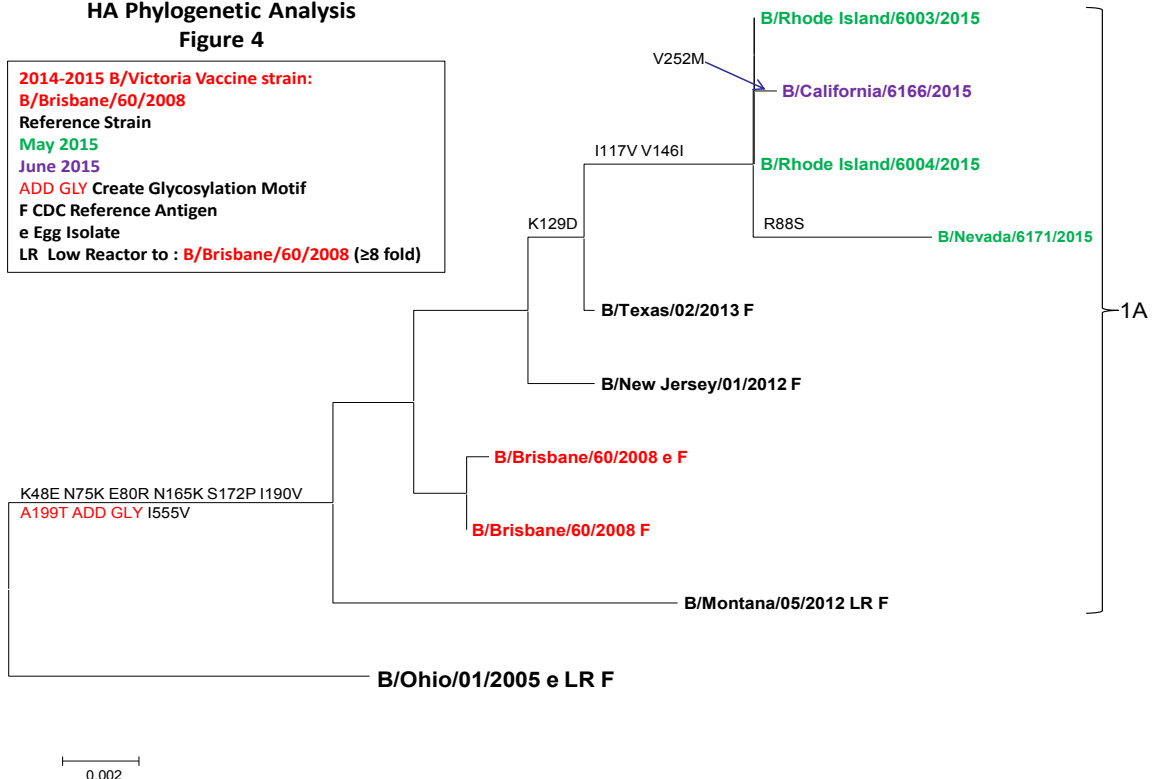
Influenza B

- The influenza B isolates are characterized in lineage specific; neighbor-joining phylogenetic trees with reference strains. The phylogenetic trees are rooted from previous vaccines, B/Florida/04/2006-like virus for Yamagata specimens [Figure 3] and B/Ohio/01/2005-like virus for the Victoria specimens [Figure 4].
- The distinguishing characteristic between the two lineages (Victoria & Yamagata) is defined by an amino acid deletion in viruses belonging to the Yamagata lineage.¹ Nine of the influenza B specimens characterized for this report reside within the Yamagata lineage (69%) while four reside within the Victoria lineage (31%).
- The influenza B/Yamagata specimens characterized for this report exhibited an overall protein identity of 97.2-97.7% when compared to the 2013-2014 influenza B/Yamagata vaccine strain, B/Massachusetts/02/2012-like virus. When compared to the 2013-2014 influenza B/Victoria vaccine strain, B/Brisbane/60/2008-like virus, the influenza B/Victoria specimens exhibited a protein homology of 99.3-99.5%.
- All nine specimens of the influenza B/Yamagata lineage classify into group Y3, similar to the 2012-2013 B Yamagata vaccine strain, B/Wisconsin/01/2010-like virus.
- All four influenza B/Victoria specimens in this report were characterized as being in group 1A, identified by the mutations N75K (asparagine to lysine), N165K (asparagine to lysine), and S172P (serine to proline).
- Within the influenza B specimens characterized in this report, one mutation on the Yamagata lineage, T533I (threonine to isoleucine), was observed that could cause a loss of a glycosylation motif, and two mutations: D197N (aspartic acid to asparagine) in the Yamagata lineage and A199T (alanine to threonine) in the Victoria lineage, were observed that could cause the gain of a glycosylation motif.

Recent 2014-2015 Influenza B/Yamagata
HA Phylogenetic Analysis
Figure 3



Recent 2014-2015 Influenza B/Victoria
HA Phylogenetic Analysis
Figure 4



References:

1. Wright, P, Neumann, G, Kaqaoka, Y 2007. Orothomyxoviruses 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., Uiprasertkul, 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.

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DoD Global Laboratory-Based Influenza Surveillance Program



USAF School of Aerospace Medicine

2014 - 2015

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



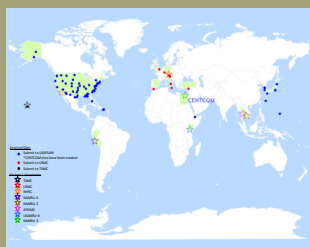
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Contributions to the CDC for National Influenza Surveillance

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-2015-2196 and PA email guidance dated 1 May 2015.

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