DoD Global, Laboratory-Based, Influenza Surveillance Program

USAF School of Aerospace Medicine

2014 - 2015

Cumulative Results

Locations	81
Collected	3602
Tested	3206

Influenza A	**1,272**
A(H1N1)pdm09	1
A(H3N2)	1,268
A/not subtyped	0
A & Coronavirus	1
A & Parainfluenza	1
A(H3N2) & Coronavirus	1

Influenza B	**54**
B/Unknown or pending lineage	44
B & Rhino/Enterovirus	1
B/Victoria	1
B/Yamagata	8

Other Respiratory Pathogens	**476**
Adenovirus	50
Bordetella Pertussis	0
Chlamydophila pneumoniae	0
Coronavirus	28
Human Metapneumovirus	11
Mycoplasma pneumoniae	23
Parainfluenza	94
RSV	79
Rhino/Enterovirus	144
Non-influenza Co-infections	47

Lab data are current as of 2 February 2015. Results are preliminary and may change as more results are received.

Respiratory Highlights
18-31 January 2015 (Surveillance Weeks 3 & 4)

- During 18-31 January 2015, a total of 510 specimens were collected and received from 59 locations. Results were finalized for 203 specimens from 50 locations. During Week 3, the laboratory identified 121 influenza A(H3N2) and eight influenza B. During Week 4, 30 influenza A(H3N2) and two influenza B were identified. See Table 1 below for results of other respiratory viruses identified during Weeks 3 & 4.
- On 30 January 2015, a second North American human case of Avian Influenza A(H7N9) was confirmed. This person had traveled through China with the individual who became the first North American human case of Avian Influenza A(H7N9). Neither individual was hospitalized and both recovered from their acute respiratory symptoms. They have agreed to self-isolation at home. The WHO continues to closely monitor the H7N9 situation and conduct risk assessment. So far, the overall risk associated with the H7N9 virus has not changed. (WHO Update), cited 3 February 2015).
- This report contains a molecular sequence report (pages 11-16) and a EUCOM supplemental report (pages 9-10).

Table 1. Results by region and location for specimens collected and finalized during Weeks 3 & 4

Region*		A(H3N2)	B	Adenovirus	Parainfluenza	RSV	Rhinovirus/ Enterovirus	No Pathogen	Total
PACOM	Eielson AFB, AK	1	-	-	-	-	-	-	1
	Misawa AB, Japan	1	-	-	-	-	-	-	1
	Osan AB, South Korea	1	-	-	-	-	-	-	1
	Yokota AB, Japan	6	-	-	-	-	-	-	6
Region 1	Hanscom AFB, MA	3	-	-	-	-	-	-	3
	NHCNE Newport, RI	3	-	-	-	-	-	-	3
Region 2	Ft Drum, NY	3	-	1	-	-	1	-	5
	JB McGuire-Dix-Lakehurst, NJ	4	-	-	-	-	-	1	5
	USMA - West Point, NY	23	-	2	-	-	-	3	28
Region 3	Dover AFB, DE	1	-	-	-	-	-	-	1
	JB Andrews, MD	1	-	-	-	-	-	-	1
Region 4	CGS Mobile, AL	1	-	-	-	-	-	-	1
	Columbus AFB, MS	1	-	-	-	-	-	-	1
	Eglin AFB, FL	-	-	-	-	1	-	2	3
	Ft Bragg, NC	-	-	-	-	-	-	1	1
	Ft Campbell, KY	6	-	1	-	-	-	-	7
	Hurlburt Field, FL	2	-	-	-	-	-	-	2
	JB Charleston (AF), SC	3	-	-	-	-	-	-	3
	Maxwell AFB, AL	1	-	1	-	-	-	1	3
	Moody AFB, GA	3	-	-	-	1	-	-	4
	Robins AFB, GA	1	1	-	-	-	-	1	3
	Shaw AFB, SC	1	-	-	-	-	-	-	1
	USCG Base Elizabeth City, NC	1	-	-	-	-	-	-	1
Region 5	Scott AFB, IL	-	-	-	1	-	-	-	1
	Wright-Patterson AFB, OH	-	-	-	-	-	-	1	1
Region 6	Altus AFB, OK	1	-	-	-	1	-	-	2
	Cannon AFB, NM	4	-	-	-	-	-	-	4
	Laughlin AFB, TX	-	-	-	-	-	-	2	2
	Little Rock AFB, AR	3	-	-	-	-	-	-	3
	Sheppard AFB, TX	3	1	-	-	-	-	-	4
	Tinker AFB, OK	10	2	-	-	-	-	1	13
Region 7	Ft Leavenworth, KS	1	-	-	-	-	-	-	1
	McConnell AFB, KS	10	1	-	-	-	-	-	11
	Offutt AFB, NE	10	-	-	-	-	-	-	10
Region 8	Buckley AFB, CO	-	-	-	-	1	-	-	1
	Ellsworth AFB, SD	5	2	-	-	-	-	-	7
	FE Warren AFB, WY	-	1	-	-	-	-	-	1
	Hill AFB, UT	1	-	-	-	-	-	-	1
	Malmstrom AFB, MT	1	-	-	-	-	-	-	1
	Minot AFB, ND	4	-	-	-	2	-	-	6
	USAF Academy, CO	2	-	-	-	-	-	-	2
Region 9	Davis-Monthan AFB, AZ	1	-	-	-	-	-	-	1
	Luke AFB, AZ	4	-	-	-	-	-	-	4
	Nellis AFB, NV	3	2	-	-	-	-	-	5
	Travis AFB, CA	5	-	-	-	1	-	9	15
	USCG Island Alameda, CA	1	-	-	-	-	-	1	2
	Vandenberg AFB, CA	1	-	-	-	-	-	-	1
Region 10	Fairchild AFB, WA	5	-	-	-	1	-	-	6
	Mt Home AFB, ID	3	-	-	-	-	-	-	3
	NH Bremerton, WA	6	-	1	-	2	-	1	10
Total		151	10	6	1	10	1	24	203

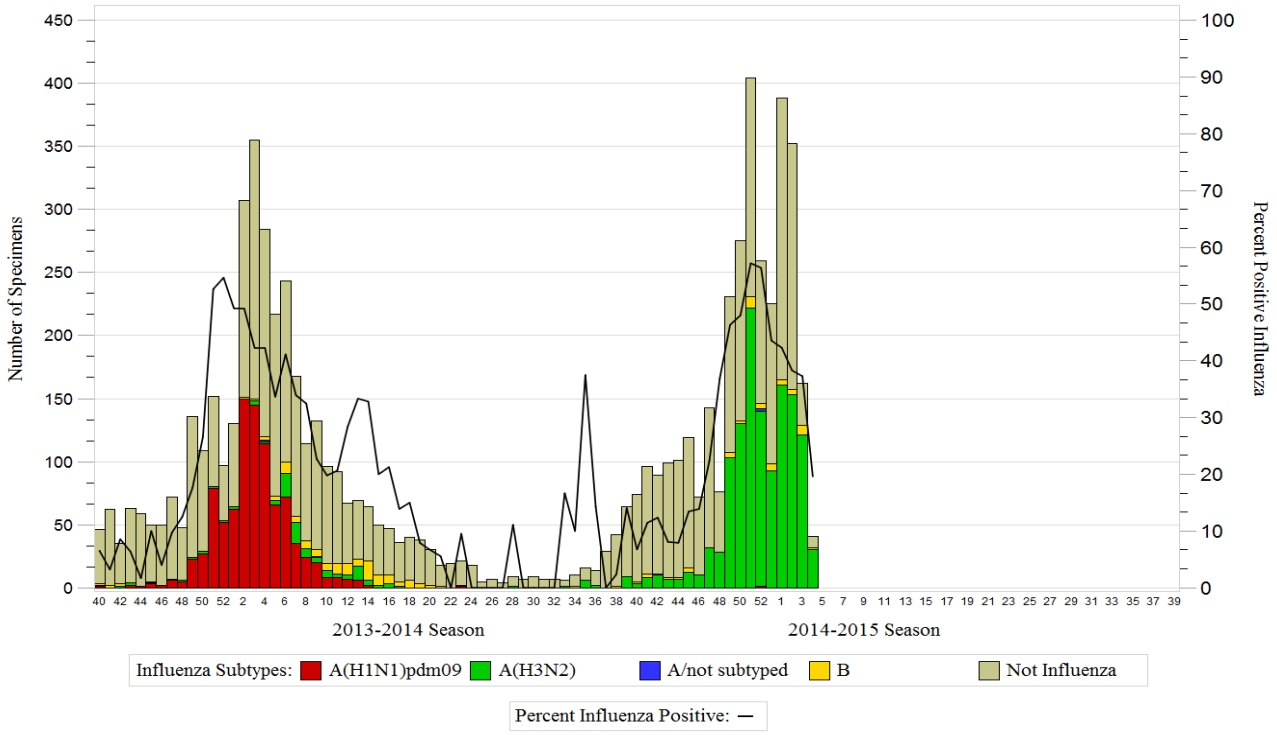
**US Regions are based on Health & Human Services regions. Other locations are defined by COCOM.*

Distribution Statement A: Distribution is unlimited. 88ABW-2015-0428, 6 February 2015.

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

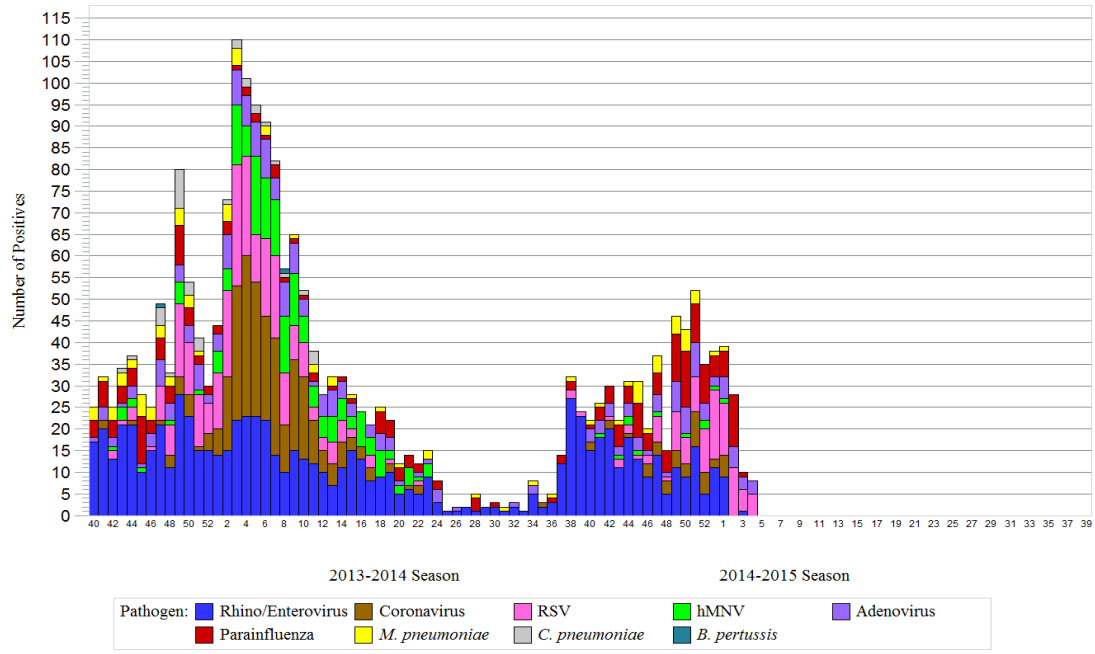
Laboratory Results - Cumulative for Season

Graph 1. Percent influenza positive by week: 2013-2014 surveillance year and through Week 4 of the 2014-2015 surveillance year



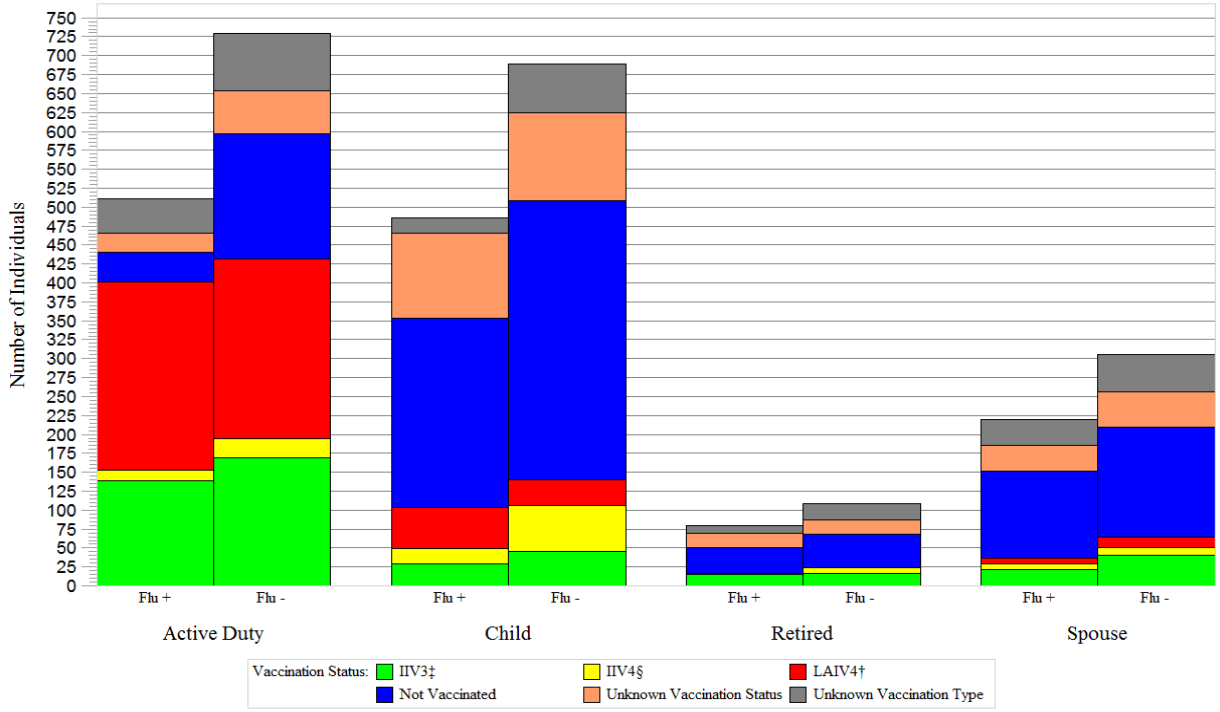
Note: One specimen positive for influenza A(H3N2)v has been excluded from the graph during the 2013-2014 season.
Specimens pending results are used in the denominator to calculate percent positive, but are not displayed in the graph.

Graph 2. Other respiratory pathogen results by week: 2013-2014 surveillance year and through Week 4 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.

Graph 3. Vaccination status by beneficiary type for the 2014-2015 surveillance year through Week 4



‡ Influenza, inactivated vaccine (trivalent)

§ Influenza, inactivated vaccine (quadrivalent)

† Live, attenuated influenza vaccine (quadrivalent)

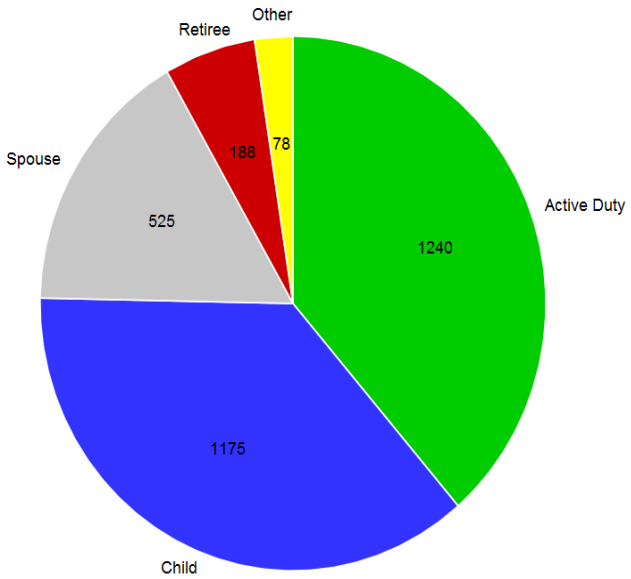
Table 2. ILI by age group for the 2014-2015 surveillance year through Week 4

Age Group	Frequency	Percent
0-5	629	19.62
6-9	239	7.45
10-17	308	9.61
18-24	458	14.29
25-44	1140	35.56
45-64	326	10.17
65+	95	2.96
Unknown	11	0.34

Demographic Summary

Of 3,206 ILI cases, 1,240 are service members (38.7%), 1,175 are children (36.7%), 525 (16.4%) are spouses, and 266 (8.3%) are retirees & other beneficiaries. There are no unknown beneficiary types. The median age of ILI cases with known age (n=3,195) is 24.0 (range 0, 94) and 1,176 (36.7%) 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 4



Laboratory Results—Through Current Surveillance Week 4

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 & Corona	A/not subtyped & Para	A(H3N2) & Corona	B	B/Victoria	B/Yamagata	B & Rhino/Entero	Adenovirus	Coronavirus	hMNV	*M. pneumoniae*	Parainfluenza	RSV	Rhinovirus/Enterovirus	Non-Influenza Co-Infection	No Pathogen	Total
Deployed	Country 1, Location B	-	19	-	-	-	-	-	-	-	-	2	-	-	-	-	3	-	45	69
	Country 2, Location A	-	41	-	-	-	3	-	-	-	-	-	-	-	-	-	3	-	19	66
PACOM	CFA Okinawa, Japan	-	1	-	-	-	-	-	-	-	2	-	-	-	-	-	2	-	18	23
	Eielson AFB, AK	-	4	-	-	-	1	-	-	-	2	-	-	-	-	-	1	-	5	13
	JB Elmendorf-Richardson, AK	-	7	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	5	13
	JR Marianas - Andersen AFB, Guam	-	10	-	-	-	1	-	4	-	1	-	3	-	1	3	4	1	18	46
	JR Marianas - NH Guam, Guam	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
	Kadena AB, Japan	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	3	7
	Kunsan AB, South Korea	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3
	Misawa AB, Japan	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	4	15
	Osan AB, South Korea	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	9
	Tripler AMC, HI	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
	Yokota AB, Japan	-	28	-	-	-	1	-	-	-	2	-	-	-	1	-	-	1	11	44
Region 1	Hanscom AFB, MA	-	13	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	12	27
	NHCNE Newport, RI	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	12	23
	USCG Academy, CT	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	7	9
Region 2	Ft Drum, NY	-	27	-	-	-	4	-	-	-	2	1	-	1	2	2	10	5	32	86
	JB McGuire-Dix-Lakehurst, NJ	-	29	-	-	1	-	-	-	-	-	-	-	-	-	-	3	-	12	45
	USMA - West Point, NY	-	46	-	-	-	-	-	-	-	2	4	-	3	4	4	6	2	59	130
Region 3	CG Base Portsmouth, VA	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
	Dover AFB, DE	-	10	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	3	15
	JB Anacostia-Bolling, DC	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
	JB Andrews, MD	-	2	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-	3	8
	JB Langley-Eustis, VA	-	6	-	-	-	-	-	-	-	1	-	-	-	1	-	-	1	9	18
	NCRM - Ft Belvoir CH, VA	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	4	1	4	11
	NCRM - Walter Reed NMMC, MD	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	2
	NMC Portsmouth, VA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Region 4	CGS Mobile, AL	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	13
	Columbus AFB, MS	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	19
	Eglin AFB, FL	-	11	-	-	-	2	-	-	-	-	-	-	1	-	3	1	2	27	47
	Ft Bragg, NC	-	30	-	-	-	-	-	-	-	2	2	2	-	3	7	2	1	38	87
	Ft Campbell, KY	-	27	-	-	-	2	-	-	-	2	-	-	-	4	1	3	-	17	56
	Hurlburt Field, FL	-	17	-	-	-	1	-	-	-	1	-	-	1	-	2	3	1	18	44
	JB Charleston (AF), SC	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	11
	JB Charleston (Navy), SC	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2	-	1	4
	Keesler AFB, MS	-	6	-	-	-	1	-	-	-	2	-	-	-	-	1	1	2	16	29
	MacDill AFB, FL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	7
	Maxwell AFB, AL	-	29	-	-	-	4	-	-	-	1	1	-	-	1	1	4	-	46	87
	Moody AFB, GA	-	78	-	-	-	3	1	1	-	3	7	1	1	6	3	11	4	39	158
	NH Beaufort, SC	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	1	5	9
	NH Camp Lejeune, NC	-	61	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	8	72
	NH Jacksonville, FL	-	1	-	-	-	-	-	-	-	1	-	1	-	-	-	4	1	-	8
	Robins AFB, GA	-	34	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	27	63
	Seymour Johnson AFB, NC	-	14	-	-	-	-	-	-	-	1	-	-	-	1	2	4	-	11	33
	Shaw AFB, SC	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	8	14
	Tyndall AFB, FL	-	13	-	-	-	-	-	3	-	1	-	-	-	-	1	-	1	11	30
	USCG Base Elizabeth City, NC	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3

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

Continued on Page 5

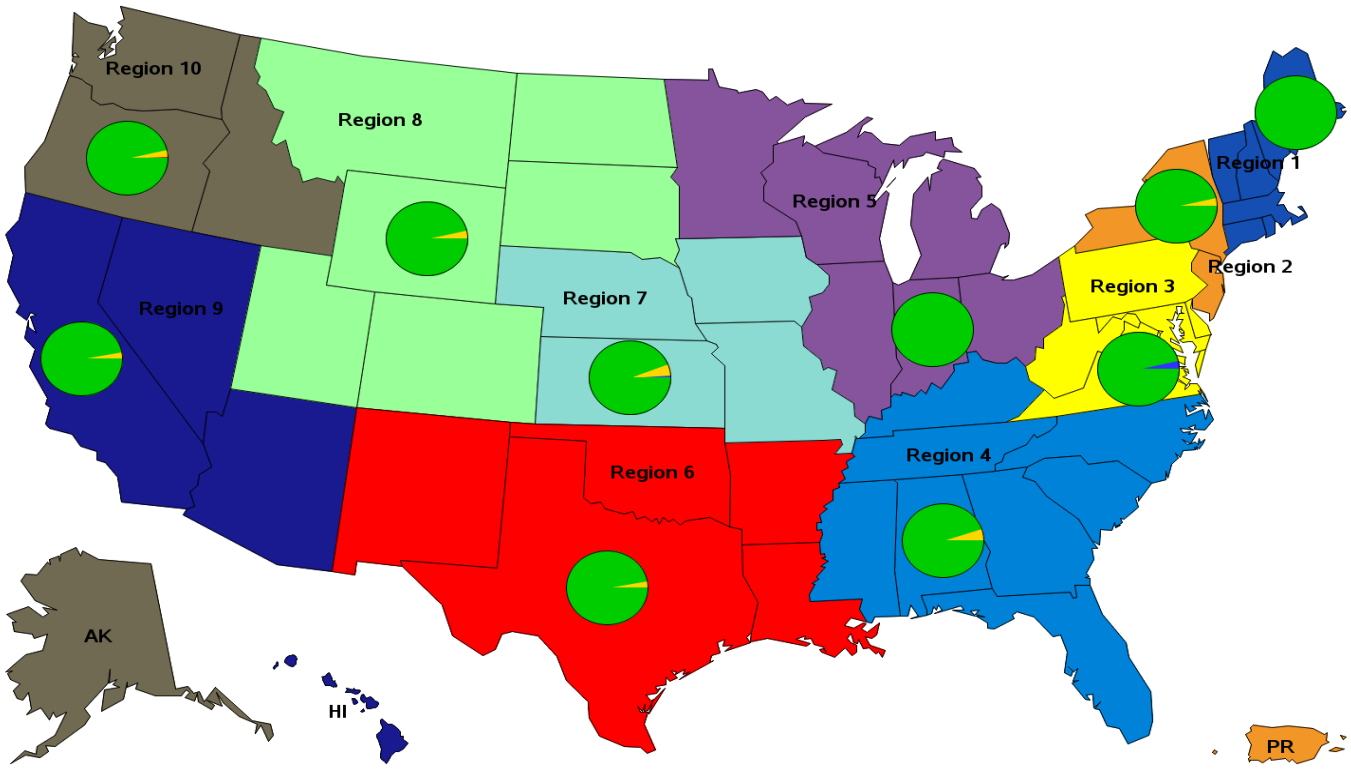
Laboratory Results—Through Current Surveillance Week 4

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 & Corona	A/not subtyped & Para	A(H3N2) & Corona	B	B/Victoria	B/Yamagata	B & Rhino/Entero	Adenovirus	Coronavirus	hMNV	*M. pneumoniae*	Parainfluenza	RSV	Rhinovirus/Enterovirus	Non-Influenza Co-Infection	No Pathogen	Total
Region 5	Scott AFB, IL	-	23	-	-	-	-	-	-	-	1	1	-	-	2	-	1	-	19	47
	Wright-Patterson AFB, OH	-	9	-	-	-	-	-	-	-	-	1	-	-	-	2	6	-	31	49
Region 6	Altus AFB, OK	-	5	-	-	-	-	-	-	1	2	1	-	-	-	3	3	2	18	35
	Barksdale AFB, LA	-	9	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	6	17
	Cannon AFB, NM	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	7
	Ft Hood, TX	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
	Holloman AFB, NM	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Laughlin AFB, TX	-	4	-	-	-	-	-	-	-	1	-	-	2	-	-	-	2	10	19
	Little Rock AFB, AR	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	31
	SAMMC, TX	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
	Sheppard AFB, TX	-	65	-	-	-	1	-	-	-	3	3	-	1	2	3	1	4	47	130
	Tinker AFB, OK	-	94	-	-	-	3	-	-	-	1	2	-	1	6	4	5	-	100	216
	USCG New Orleans, LA	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Region 7	Ft Leavenworth, KS	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	McConnell AFB, KS	-	20	-	1	-	1	-	-	-	-	1	-	-	-	-	-	-	12	35
	Offutt AFB, NE	-	58	-	-	-	3	-	-	-	3	-	-	2	8	-	9	1	110	194
Region 8	Buckley AFB, CO	-	2	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	8	12
	Ellsworth AFB, SD	-	18	-	-	-	4	-	-	-	2	1	-	1	5	-	2	-	13	46
	FE Warren AFB, WY	-	27	-	-	-	1	-	-	-	1	-	-	-	8	1	1	-	21	60
	Hill AFB, UT	-	32	-	-	-	1	-	-	-	-	-	-	1	3	2	4	-	18	61
	Malmstrom AFB, MT	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2
	Minot AFB, ND	-	10	-	-	-	-	-	-	-	1	-	-	3	3	4	1	-	11	33
	Peterson AFB, CO	-	50	-	-	-	-	-	-	-	-	-	-	1	2	1	3	1	27	85
	USAF Academy, CO	-	23	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	16	41
Region 9	Davis-Monthan AFB, AZ	-	10	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	20	32
	Edwards AFB, CA	-	6	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	6	13
	Luke AFB, AZ	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	13
	Nellis AFB, NV	-	12	-	-	-	2	-	-	-	1	-	-	-	-	-	-	-	8	23
	Travis AFB, CA	-	25	-	-	-	-	-	-	-	1	-	-	1	10	6	10	1	126	180
	USCG Island Alameda, CA	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4
	Vandenberg AFB, CA	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Region 10	Fairchild AFB, WA	-	7	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	4	13
	Mt Home AFB, ID	-	7	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	6	14
	NH Bremerton, WA	1	79	-	-	-	2	-	-	-	5	-	2	2	14	17	13	7	153	295
Total		1	1268	1	1	1	44	1	8	1	50	28	11	23	94	79	144	47	1404	3206

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

Map 1. Percentage of influenza positives by region for the 2014-2015 surveillance year through Week 4

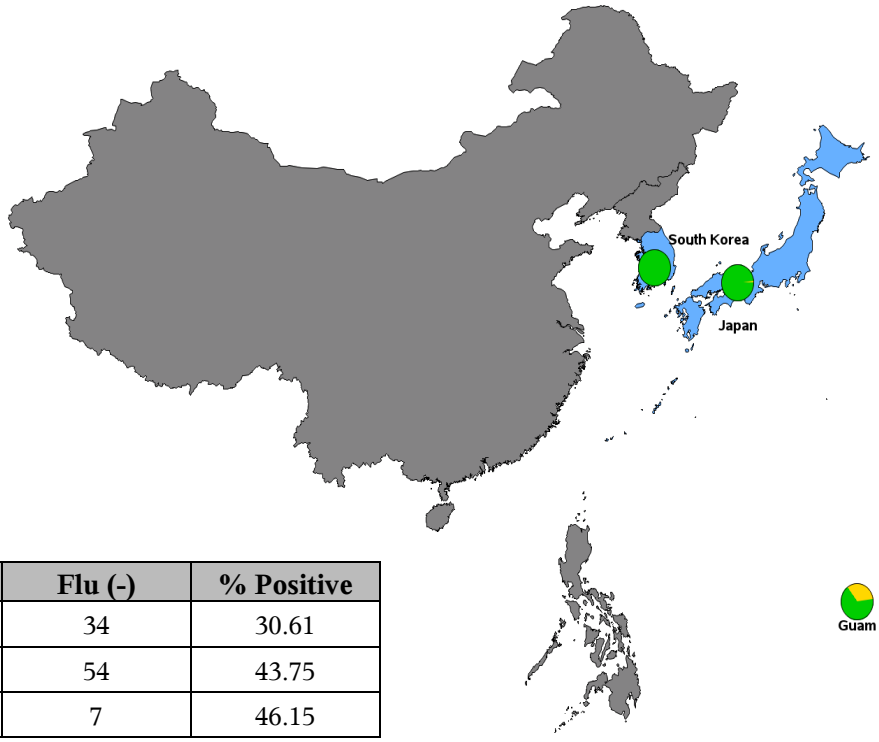


Region	Flu (+)	Flu (-)	% Positive
Region 1	22	48	31.43
Region 2	107	185	36.64
Region 3	28	40	41.18
Region 4	376	468	44.55
Region 5	32	68	32
Region 6	205	313	39.58
Region 7	84	174	32.56
Region 8	169	200	45.8
Region 9	69	230	23.08
Region 10	108	353	23.43

Legend
- Influenza A(H3N2)
- Influenza A(H1N1)pdm09
- Influenza B
- Influenza A/not subtyped

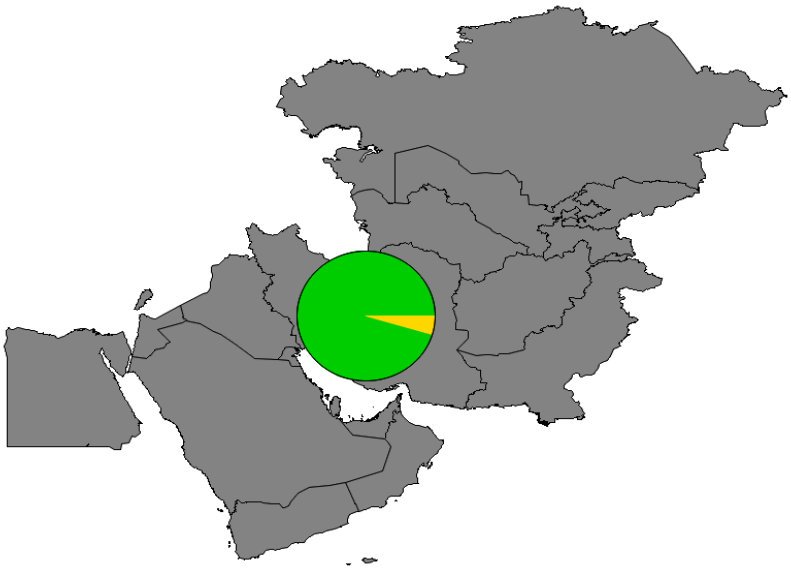
Distribution Statement A: Distribution is unlimited. 88ABW-2015-0428, 6 February 2015.

Map 2. Percentage of influenza positives by region for the 2014-2015 surveillance year through Week 4 (Pacific)



Country	Flu (+)	Flu (-)	% Positive
Guam	15	34	30.61
Japan	42	54	43.75
South Korea	6	7	46.15

Map 3. Percentage of influenza positives by region for the 2014-2015 surveillance year through Week 4 (CENTCOM)



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

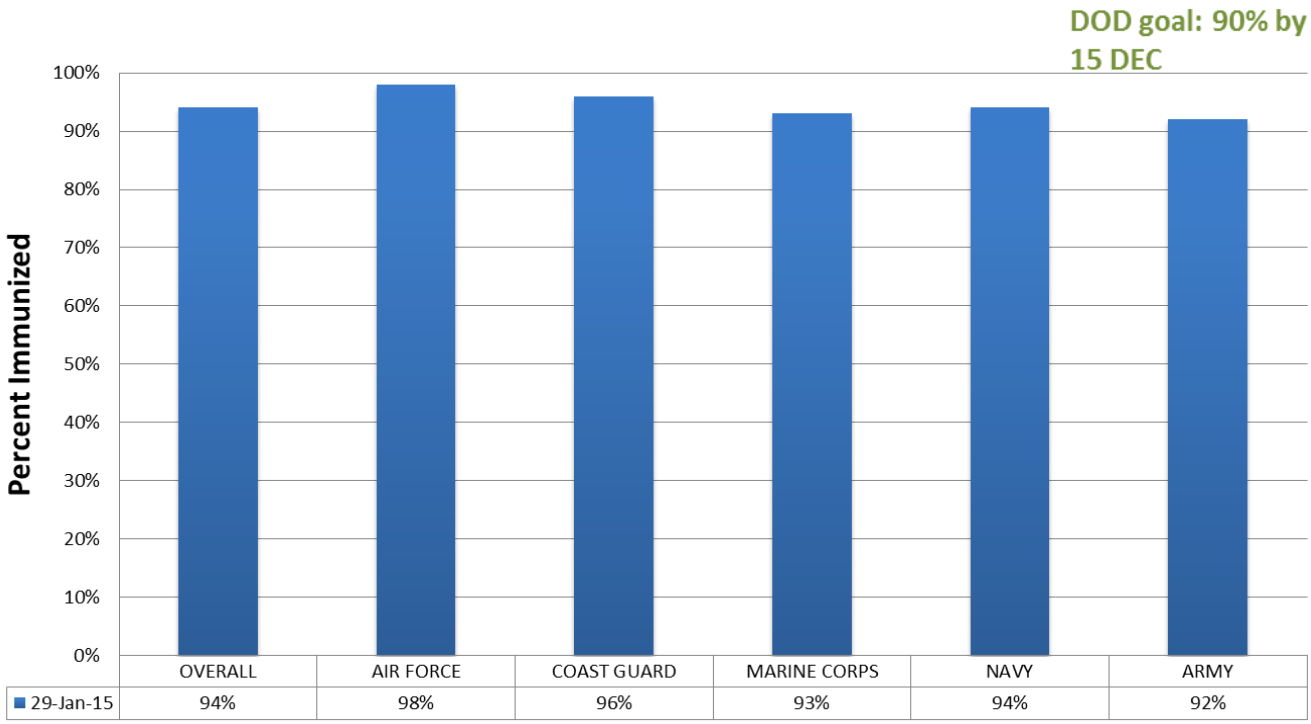
Legend

- Influenza A(H3N2)
- Influenza A(H1N1)pdm09
- Influenza B
- Influenza A/not subtyped

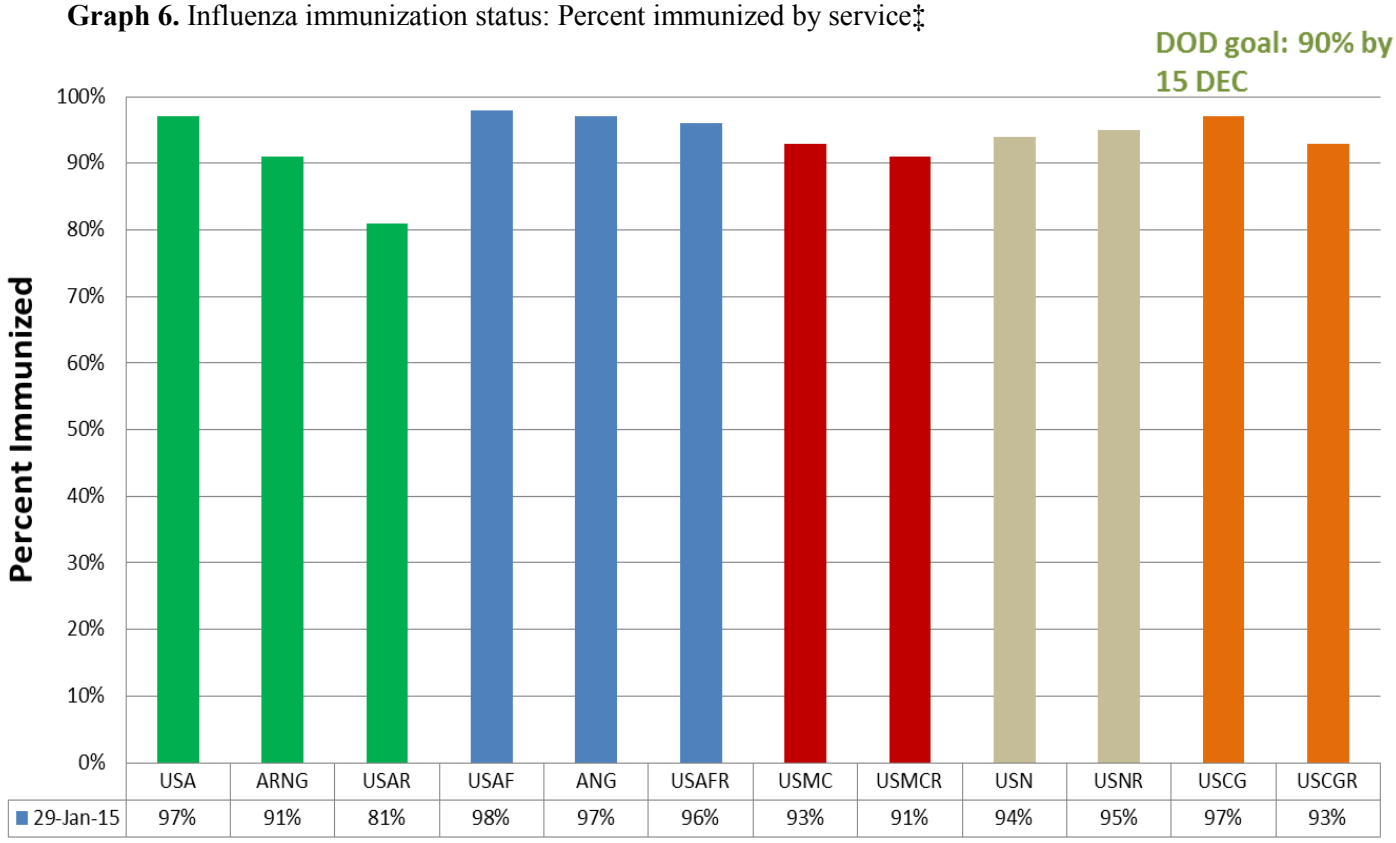
Countries marked in blue contain sentinel sites

Country	Flu (+)	Flu (-)	% Positive
Country 1	19	50	27.54
Country 2	44	22	66.67
Country 6	2	13	13.33

Graph 5. Influenza immunization status: Percent immunized by service‡



Graph 6. Influenza immunization status: Percent immunized by service‡



‡Courtesy of DHA Immunizations

Monthly EUCOM Respiratory Surveillance Supplemental Report Through 31 January 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.

Results are presented through 31 January 2015 unless otherwise indicated. Lab results are preliminary and may change as more results are received.

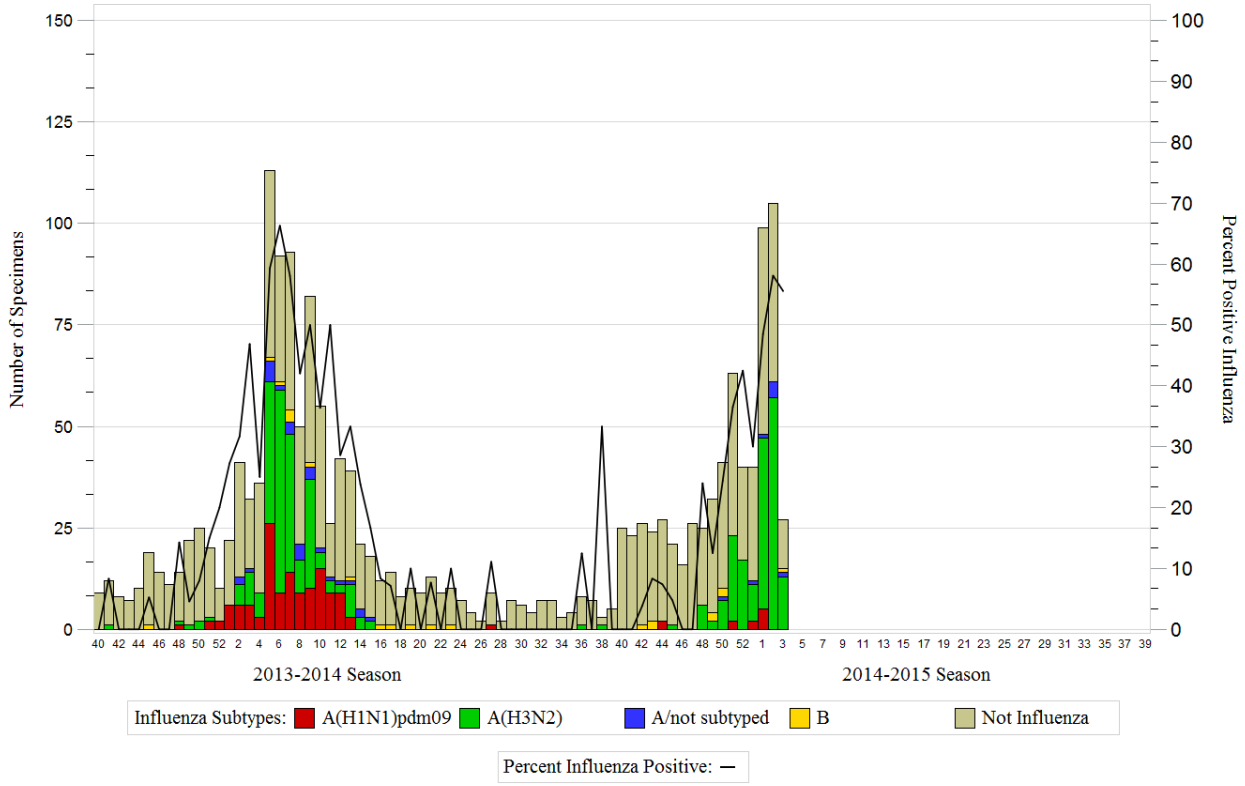
Table 4. Results by region and location for specimens collected and finalized during Week 3 & 4

Region		A(H3N2)	A/not subtyped & Rhino/Entero	B	RSV	Rhinovirus/ Enterovirus	No Pathogen	Total
EUCOM	Landstuhl RMC, Germany	9	1	1	1	2	6	20
	Ramstein AB, Germany	4	-	-	2	-	-	6
	USAG Stuttgart, Germany	-	-	-	-	-	1	1
Total		13	1	1	3	2	7	27

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

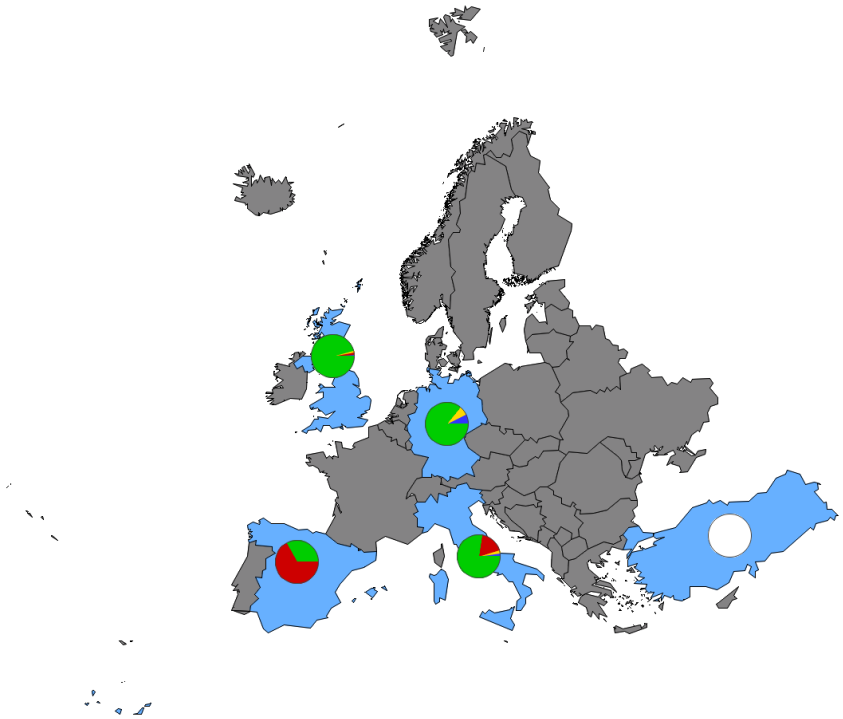
Region		A(H1N1)pdm09	A(H3N2)	A/not subtyped	A/not subtyped & Rhino/Entero	A(H3N2) & hMNV	A(H3N2) & RSV	A(H3N2) & Rhino/Entero	B	B & RSV	B & Rhino/Entero	Adenovirus	hMNV	Parainfluenza	RSV	Rhinovirus/Enterovirus	Adeno & RSV	Adeno & Rhino/Entero	hMNV & RSV	hMNV & Rhino/Entero	Para & RSV	Para & Rhino/Entero	RSV & Rhino/Entero	No Pathogen	Total
Deployed	Country 6, Location A	-	2	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	9	15
EUCOM	Aviano AB, Italy	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	15
	Incirlik AB, Turkey	-	-	-	-	-	-	-	-	-	-	1	-	3	-	2	-	1	-	-	-	-	-	4	11
	Landstuhl RMC, Germany	-	29	1	1	-	-	-	2	-	-	-	2	6	16	24	1	3	1	-	1	1	2	58	148
	NAS Sigonella, Italy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
	NAVSTA Rota, Spain	2	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	12	16
	NSA Naples, Italy	1	1	1	-	-	-	-	-	-	-	-	-	-	3	5	-	-	-	-	-	-	-	12	23
	RAF Lakenheath, England	1	60	1	-	-	2	4	-	1	-	-	-	1	10	23	-	-	-	1	1	-	9	67	181
	Ramstein AB, Germany	-	18	-	-	-	-	-	-	-	1	-	-	2	3	9	-	1	-	-	-	2	-	16	52
	Spangdahlem AB, Germany	-	4	-	-	-	-	-	-	-	-	-	-	1	1	2	-	-	-	-	-	-	-	10	18
	USAG Grafenwoehr, Germany	-	5	-	-	-	-	-	2	-	-	-	-	-	1	3	-	-	-	-	-	-	-	10	21
	USAG Stuttgart, Germany	-	7	3	-	-	-	-	-	-	-	-	-	3	-	5	-	-	-	-	-	-	-	17	35
	USAG Vicenza, Italy	4	28	-	-	1	-	2	-	-	1	-	-	1	-	15	-	-	-	-	-	-	-	29	81
	Vilseck AHC, Germany	-	9	1	-	-	-	-	1	-	-	2	-	1	2	11	-	-	-	-	-	-	-	16	43
Total		11	166	7	1	1	2	6	5	1	2	3	2	18	36	105	1	5	1	1	2	3	11	270	660

Graph 7. Percent influenza positive by week: 2013-2014 surveillance year and through Week 4 of the 2014-2015 surveillance year

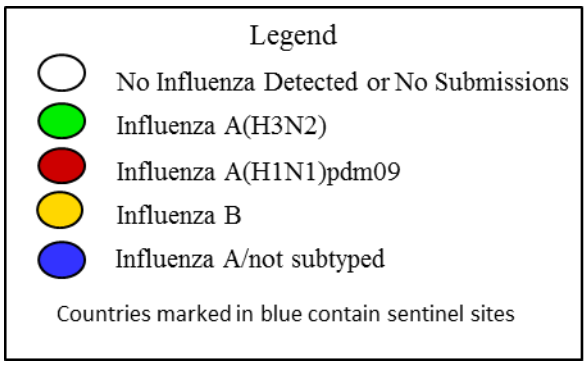


Note: Five dual influenza co-infections have been excluded from the graph during the 2013-2014 season.

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



Country	Flu (+)	Flu (-)	% Positive
England	69	112	38.12
Germany	84	233	26.5
Italy	44	76	36.67
Spain	3	13	18.75
Turkey	0	11	0



Molecular Sequence Analysis Report

USAFSAM Epidemiology Laboratory Service

This is the third report for the 2014-2015 season. Out of 123 total specimens collected between 23 November 2014 and 22 December 2014 and subsequently analyzed by USAFSAM, 121 were Influenza A(H3N2) virus specimens (98%) and two were Influenza B virus specimens (2%).

		A(H3N2)	B/Victoria
CONUS	**Alabama** Maxwell AFB	2	
	Alabama CGS Mobile	1	
	Alaska JB Elmendorf-Richardson	1	
	California Edwards AFB	1	
	Colorado Buckley AFB	1	
	Colorado Dover AFB	2	
	Colorado Peterson AFB	2	
	Colorado USAF Academy	**7**	
	Florida Tyndall AFB	3	
	Florida Eglin AFB	2	
	Georgia Moody AFB	6	
	Georgia Robins AFB	5	
	Illinois Scott AFB	2	
	Kentucky Ft Campbell	3	
	Louisiana Barksdale AFB	2	1
	Louisiana USCG New Orleans	1	
	Minnesota Holloman AFB	1	
	Mississippi Keesler AFB	2	1
	Nebraska Offutt AFB	5	
	Nevada Nellis AFB	1	
	New Jersey JB McGuire-Dix-Lakehurst	1	
	New York Ft Drum	1	
	New York USMA	4	
	North Carolina NH Camp Lejeune	18	
	North Carolina Ft Bragg	8	
	North Carolina Seymour Johnson AFB	1	
	North Dakota Minot AFB	1	
	Texas Laughlin AFB	1	
	Texas Sheppard AFB	11	
	Oklahoma Tinker AFB	12	
	Utah Hill AFB	1	
	Virginia JB Langley-Eustis	1	
	Washington NH Bremerton	5	
	Wyoming FE Warren AFB	2	
OCONUS	**Country 2 Location A**	1	
	Germany Landstuhl RMC	2	
	Japan Yokota AB	1	
Total		121	2

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.

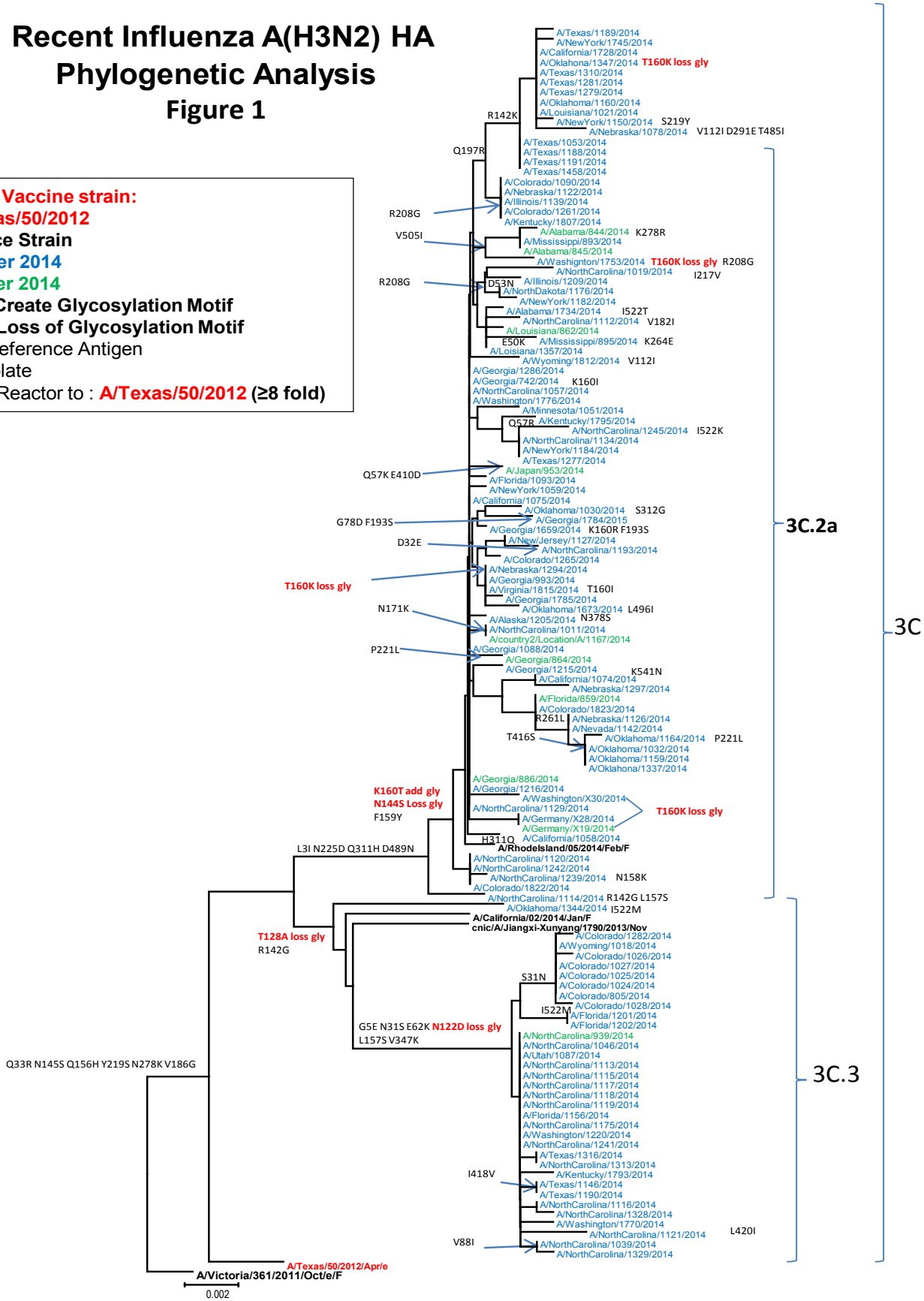
Influenza A(H3N2)

- Isolates are characterized in a neighbor-joining phylogenetic tree with reference strains 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 97.1-98.2% as compared to the A(H3N2) component of the 2014-2015 vaccine formulation, A/Texas/50/2012-like virus.
- 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 specimens characterized in this report, four mutations: T128A (threonine to alanine), N122D (asparagine to aspartic acid), N144S (asparagine to serine), and T160K (threonine to lysine) were observed that could cause a loss of a glycosylation motif. K160T (lysine to threonine) mutation was observed that could cause a gain of a glycosylation motif.
- Based on the mutations observed, all of the A(H3N2) viruses analyzed belong to clade 3C. Within this clade, 88 (73%) viruses classify as group 3C.2a and 33 (27%) viruses classify as group 3C.3 [Figure 1].

Recent Influenza A(H3N2) HA Phylogenetic Analysis

Figure 1

A(H3N2) Vaccine strain:
A/Texas/50/2012
Reference Strain
November 2014
December 2014
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)**



Influenza B

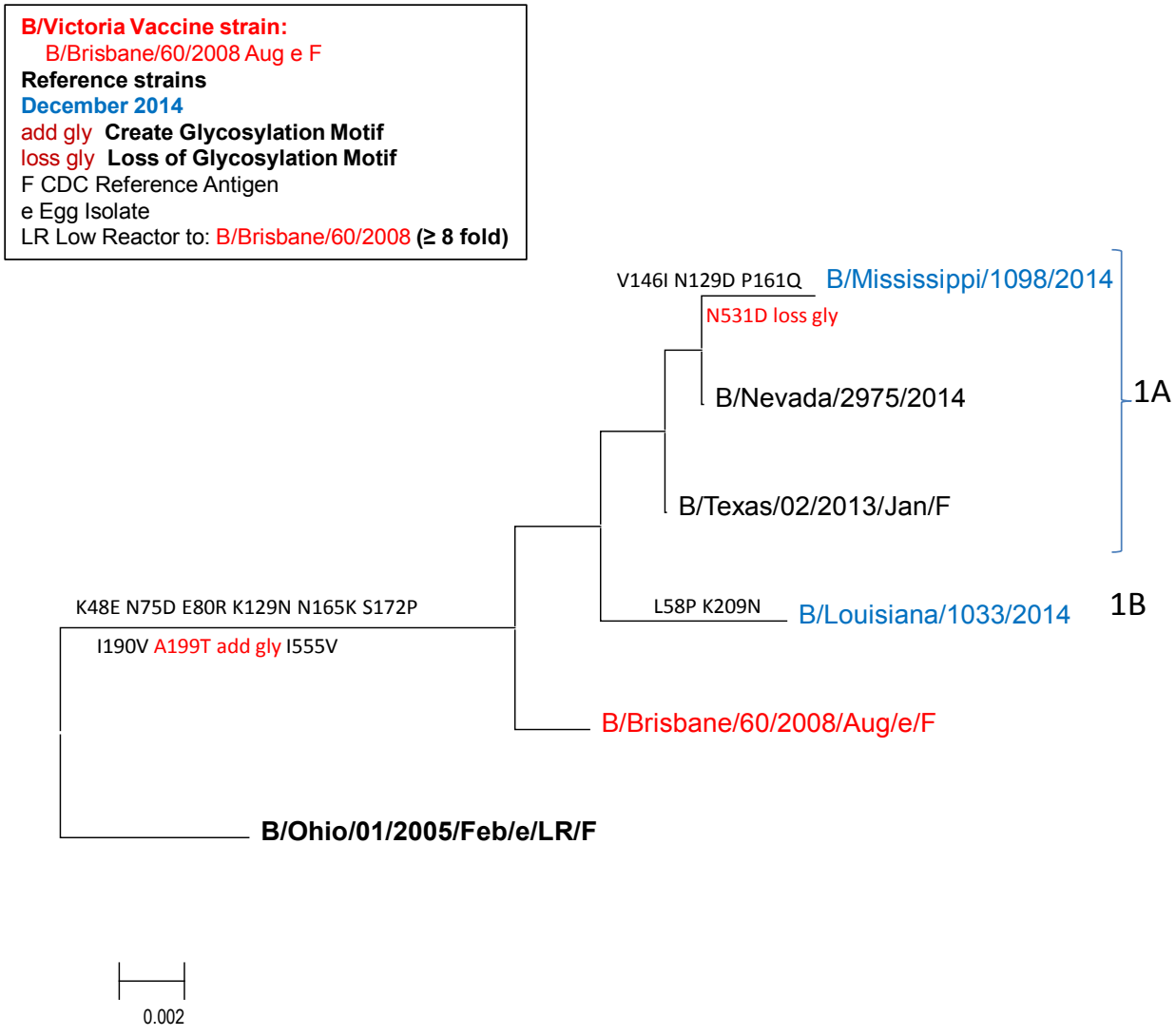
- The influenza B isolate is characterized in lineage specific; neighbor-joining phylogenetic trees with reference strains and other recently sequenced isolates. The phylogenetic trees are rooted from previous vaccines, B/Ohio/01/2005-like virus for the Victoria specimens [Figure 2].

- The distinguishing characteristic between the two lineages (Victoria & Yamagata) is defined by an amino acid deletion in viruses belonging to the Yamagata lineage.[1] All of the influenza B specimens characterized for this report reside within the Victoria lineage.

- The influenza B/Victoria specimens characterized for this report exhibited an overall protein identity of 97.9 to 98.1% when compared to the 2014-2015 influenza B/Victoria vaccine strain, B/Brisbane/60/2008-like virus.

- The influenza B/Victoria specimen B/Mississippi/1098/2014 in this report was characterized as being in group 1A, identified by the mutations V146I (valine to isoleucine), P161Q (proline to glutamine), N129D (asparagine to aspartic acid), and N531D (asparagine to aspartic acid). The mutation at N531D could cause a loss of glycosylation. The specimen B/Louisiana/1033/2014 was characterized as being in group 1B, identified by the mutations L58P (leucine to proline) and K209N (lysine to asparagine) [Figure 2].

Recent Influenza B/Victoria Lineage HA Phylogenetic Analysis
Figure 2



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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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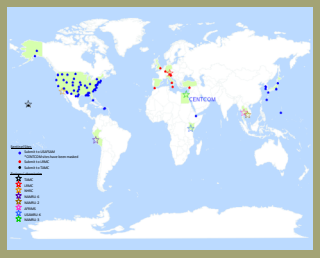

Contributions to the CDC for National Influenza Surveillance

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

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.