



Air Force Institute
for
Operational Health



U.S. AIR FORCE



DoD-GEIS Influenza Surveillance and Response Program

Information Only

Defense Health Board
03 May 2007





Background



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➤ DoD Global Influenza Surveillance Program

- DoD-GEIS Global, Laboratory-Based Influenza Surveillance Program
 - **Sentinel site** influenza surveillance
 - Managed at AFIOH, Brooks City-Base, TX
 - **Population-based** febrile respiratory illness surveillance
 - Managed at NHRC, San Diego, CA



Surveillance Sites



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➤ Routine Surveillance

- Sentinel sites
 - 65 Global Sites

➤ Expansion efforts

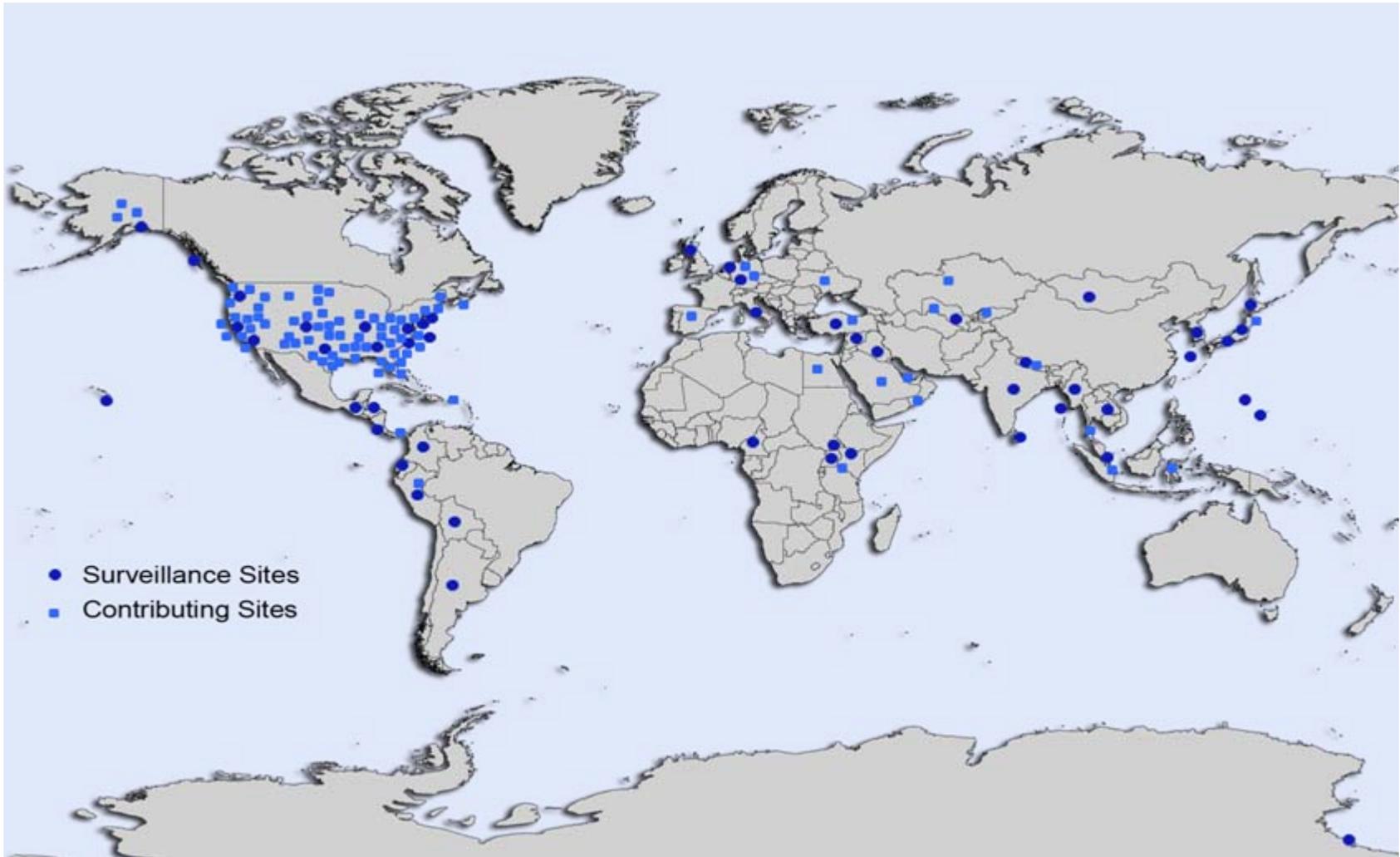
- Initial discussions for participation
- | | |
|--------------|----------|
| Hungary | Israel |
| Brazil | Poland |
| South Africa | Georgia |
| Romania | Bulgaria |



Participation



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Methods



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DoD Global Influenza Surveillance Program *Surveillance at AFIOH*

Public Health QUICK SHEET for the Influenza Surveillance Program

1. Ensure all Primary Care Manager (clinic) teams are supplied with the "Influenza Surveillance Questionnaire" (<https://gumbo.brooks.af.mil/pestilence/influenza>).
2. Ensure Primary Care Manager (clinic) teams are supplied with collection kits (contact AFIOH lab: Ina Smith @ DSN 240-1680).
3. Pick up questionnaires weekly from Primary Care Manager teams.
4. Ensure 6-10 specimens meeting the ILI case definition are submitted each week. Do not submit specimens unless they meet the ILI case definition.
5. Enter all questionnaires online at (<https://gumbo.brooks.af.mil/pestilence/influenza>).
6. Enter all lab-confirmed positive influenza specimens into the service-specific Reportable Medical Events System (i.e., AFRESSII).
7. Recommend staff training at least 3 times/yr to ensure importance of influenza surveillance. A training presentation is available at <https://gumbo.brooks.af.mil/pestilence/influenza>.
8. Notify us at influenza@brooks.af.mil if you suspect an influenza outbreak at your base. It is important that outbreaks among the military communities are tracked so threats to our military forces can be mitigated. If assistance is needed, we are happy to support you as needed-contact Angie Owens or Matt Johns at DSN 240-3471.
9. Contact us at any time!! (210) 536-3471; DSN 240-3471
E-mail: influenza@brooks.af.mil
Website: <https://gumbo.brooks.af.mil/pestilence/influenza>

Public

DoD Global, Laboratory-Based Influenza Surveillance Program

Program Overview



Air Force Institute for Operational Health
(AFIOH)
Brooks City-Base, TX



The Protocol for you

When does the surveillance occur?
Influenza surveillance in the DoD occurs annually (once a year) from October to April. The surveillance is conducted at all active duty military installations.

When specimens are collected?
Only submit specimens from patients meeting the influenza-like illness (ILI) case definition.

ILI Case Definition
Fever > 100.2°F (38°C) and an respiratory illness (cough or sore throat) of 172 hours duration.

How will I be notified?
AFIOH will automatically notify you via email if you suspect an influenza outbreak at your base. It is important that outbreaks among the military communities are tracked so threats to our military forces can be mitigated. If assistance is needed, we are happy to support you as needed-contact Angie Owens or Matt Johns at DSN 240-3471.



How do you collect and submit specimens?
Headquarters (HQ) and all active duty military installations (ADMI) are required to collect and submit specimens to AFIOH. The collection and submission process is detailed in the AFIOH Influenza Surveillance Program (ISP) manual. The manual is available at <https://gumbo.brooks.af.mil/pestilence/influenza>.

What specimens are collected?
Only submit specimens from patients meeting the influenza-like illness (ILI) case definition.

ILI Case Definition
Fever > 100.2°F (38°C) and an respiratory illness (cough or sore throat) of 172 hours duration.

How will the PCM be notified?
The results will be reported on D4C3 for use in patient management.

Do NOT freeze specimens in a laboratory freezer at -20°C.



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Be aware of the need for collection kits.
Providers should collect 4-10 specimens each week. These are sent weekly to AFIOH.

Know how to properly ship the specimens.
Specimens meeting our laboratory case definition may be held at 4°C. If longer time is expected, the vials should ideally be frozen at -20°C and only shipped on dry ice. If dry ice is not available, ship on gel packs.

If there is a problem with shipping on dry ice, please contact us.

DO NOT freeze specimens in a laboratory freezer at -20°C.



AFIOH/ISDE
2730 Louis Bauer Drive, Bldg 930
Brooks City-Base TX 76235-5132

If you have any questions, there is a user support page available for laboratory questions and ordering supplies.
AFIOH (210) 536-3471 (210) 536-8383
DSN 240-8383 (210) 536-8383

Case/Not Notation Key
All specimens (lab or approved) can be sent to our base influenza lab and/or AFIOH.

AFIOH/ISDE
2730 Louis Bauer Drive, Bldg 930
Brooks City-Base TX 76235-5132
AFIOH (210) 536-3471 (210) 536-8383
DSN 240-8383 (210) 536-8383





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AIR FORCE INSTITUTE FOR OPERATIONAL HEALTH (AFIOH)
BROOKS CITY-BASE, TX

IMPORTANT

Specimen Submission

***8-10 specimens/week

To Participate:

- 1) This questionnaire **MUST** be completed (in full) for each specimen submitted.
- 2) Patient **MUST** meet the influenza-like illness (ILI) case definition.

ILI Case Definition

- Fever $\geq 100.5^{\circ}\text{F}$ (38°C), oral or equivalent
- AND
- Cough and/or Sore Throat

Questionnaire Submission

<http://gumbo.brooks.af.mil/pesticide/influenza>

- 1) This questionnaire should be entered and submitted online.
- 2) Additional questionnaires can be downloaded from the AFIOH Influenza website.
- 3) When ordering a test in CHCS, annotate in the Remarks section "Flu Surveillance".

Make a copy of this questionnaire for administrative purposes:

- To receive discrepant information
- For celebrating results and entering them into the Reportable Medical Events System (RMES)

Questions?

Please e-mail:

influenza@brooks.af.mil

DoD Global Influenza Surveillance Program Influenza Surveillance Questionnaire

Installation/DMS Code: **Fort Bliss** Date of Clinic Visit: _____
DD-MMM-YYYY

PRIVACY ACT STATEMENT: The social security number is required to facilitate documentation of health care received and patient follow-up. The primary use of this information is to aid in preventive health and communicable disease control programs. The requested information is voluntary.

Patient Information PLEASE PRINT LEGIBLY

Patient Name: _____ Date of Birth: _____
Last Name, First Name DD-MMM-YYYY

Patient FMP/Sponsor SSN _____ / _____ Gender: Male/Female
FMP Sponsor SSN

Sponsor's (military member) Work Phone (_____) _____ DSN #: _____

If taken at home, Highest Temp Recorded: _____ Date Taken: _____
DD-MMM-YYYY

Symptoms: Please select NA (Not Applicable) if the presence of symptoms cannot be determined.

Sore Throat: Yes / No / NA Cough: Yes / No / NA Vomiting: Yes / No / NA
 Chest Pain: Yes / No / NA Fatigue: Yes / No / NA Conjunctivitis: Yes / No / NA
 Headache: Yes / No / NA Chills: Yes / No / NA Ear Ache: Yes / No / NA
 Diarrhea: Yes / No / NA Body Aches: Yes / No / NA Stiffness: Yes / No / NA
 Dyspnea: Yes / No / NA Runny Nose: Yes / No / NA Sinus Congestion: Yes / No / NA

Did the patient travel recently (past 14 days)? Yes No Unknown
If YES, Where? _____ City, State/Province, Country When? _____

Has the patient received the influenza vaccine this season? Yes No Unknown
If YES, 1st date _____ Estimated Date: _____ Month _____ & _____
DD-MMM-YYYY Month 1st half or 2nd half of year

Type: _____ Injection (Flu Shot) _____ Nasal Spray (FluMist)
Location: _____ Military facility _____ Civilian facility

Clinical Information PRINT LEGIBLY

Fever ($\geq 100.5^{\circ}\text{F}$ / 38°C , oral or equivalent) Temperature = _____
ΔΔΔ (check the symptom/s) a. _____ Cough or b. _____ Sore throat (>72 hours duration)

When did symptoms start? Date: _____ DD-MMM-YYYY

Hospitalized? Yes / No If YES, how long (hrs)? _____ Hospital Name? _____

Patient put on Quarters? Yes / No If YES, how long (hrs)? _____

Physician (name and number): _____ Name Contact Phone Number _____

Surveillance Information (to be completed by public health staff) PRINT LEGIBLY

* Entered "Influenza Surveillance" in CHCS Remarks section? Yes / No

* Questionnaire entered online (<http://gumbo.brooks.af.mil/pesticide/influenza>) date: _____
DD-MMM-YYYY

Keep questionnaires for assistance in entering information into service's "Reportable Medical Events System" (RMES).

Nasal Wash-Procedural Guidelines

- 1.) Have patient blow their nose into a tissue to clear excess mucus.
- 2.) Tuck bib into patient's shirt collar.
- 3.) Uncoax one-filled saline syringe and specimen collection container. Break the seal on the syringe by gently exercising a small amount of saline into the tip of the bulb.
- 4.) Have patient tilt their head back so they are able to look directly at the ceiling while they hold the specimen collection container up to their chin area.

Step 4-6



Step 7



- 5.) Encourage patient to not swallow saline by using "Ka Ka Ka" while saline is expressed into their nostrils.
- 6.) Gently express 2-4 mL of sterile saline into the patient's right nostril. Saline will drain back into the back of the nasopharynx.
- 7.) After a few seconds, have the patient lean their head forward so the saline will drain into the specimen collection container. Repeat for second nostril.
- 8.) Offer patient a facial tissue or have them use the bib to wipe away excess saline from their face.
- 9.) Mix the contents with the Viral Transport Medium (VTM) included in the kit. Swab the rim of the cup well held in securing the contents into the VTM tube.

Step 10



Step 11



- 11.) Place specimen in the biohazard bag included in the kit and forward to laboratory for packaging and shipment to AFIOH. In order to maintain optimal quality for diagnostics, please be sure to read the specimen for immediate shipment.

Storage, Packing and Shipping

ASSEMBLY INSTRUCTIONS

Refrigerated: Up to 4 days in VTM; also on gel packs.
Frozen (-20°C): Greater than 72 hours; also on dry ice. Please contact AFIOH if dry ice is not available at your site.
Frozen (-80°C): **Not Accessible**
Viral transport supplies may be ordered by emailing our Customer Service department at gal.hals@brooks.af.mil or by calling 610-536-8278 (DSN) 640-8278.

Please ship to: FedEx number 1541-0399-0

AFIOH/SDG 3736 Louis Bauer Drive, Building 830
San Antonio, TX 78225-6153

For additional packing and shipping details, please see the AFIOH/SDG Lab website:
<https://www.af.mil/Newsroom/AFIOH/SDG/20150303/afioh-sdg-lab-website/>

Please see the video demonstration at <http://www.airforcemedicine.af.mil/flu>

For other information please see our website at: <http://www.brooks.af.mil/astmccardroom/>

Important-
For Military Treatment Facilities:
Please remember to order
"Respiratory Viral Culture(EPI)"
in CHCS for respiratory surveillance.

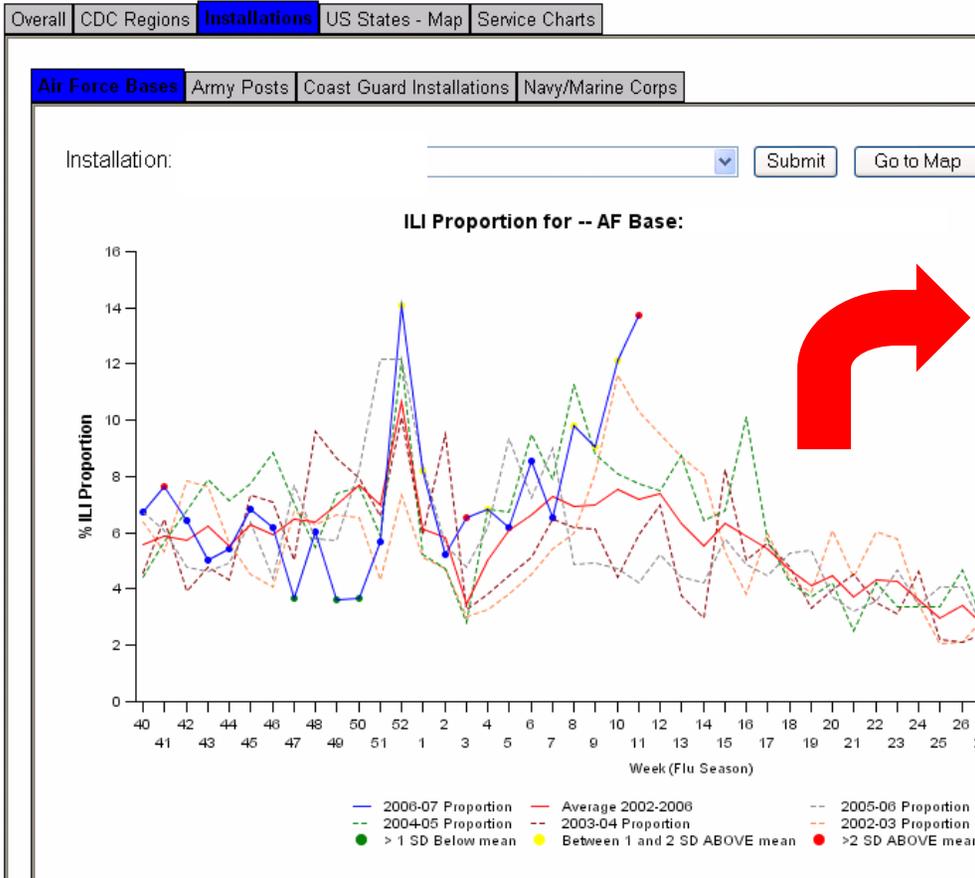




Methods



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Good Morning,

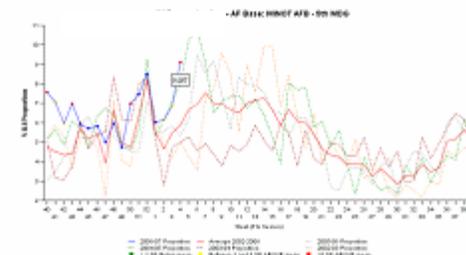
The DoD Global Influenza Surveillance Program at the Air Force Institute for Operational Health (AFIOH) reviews influenza-like illness (ILI) activity at US military sites each week. We noticed an increase in ILI activity at your site (see graph below). This is a significant increase that is notably higher than previous weeks. I understand it is currently the influenza season, but have you been made aware of any other factors that may be the cause for this spike? If so, please respond back to us within the next 8 hours.

Possible action items in response to the spike:

If your site experiences a respiratory spike such as this, we would appreciate if you could have your clinic/hospital staff:

- Contact the AFIOH laboratory at (210) 536-8383; DSN 240 for supplies and/or FedEx account number to ship specimens
- Collect a sample (6-10 per week) of specimens from patients meeting the ILI case definition (fever = 100.5°F and a cough or sore throat)
- Immediately ship to: AFIOH/SDE
2730 Louis Bauer Drive, Bldg 930
Brooks City-Base TX 78235-5132

This will help identify the agent if it is a respiratory outbreak and help to mitigate it as soon as possible. We test the specimens for a panel of respiratory viruses and report the results back to both the public health office (via electronic e-mail) and the provider (via CHCS). See the attached material for more information regarding our program. If you have any questions, you can contact us at influenza@brooks.af.mil.





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Methods



➤ Routine Surveillance

- Educate
- Provide Supplies
- Monitor influenza-like illness (ILI)
- Routine communication
 - ILI status
 - Issues



Influenza A





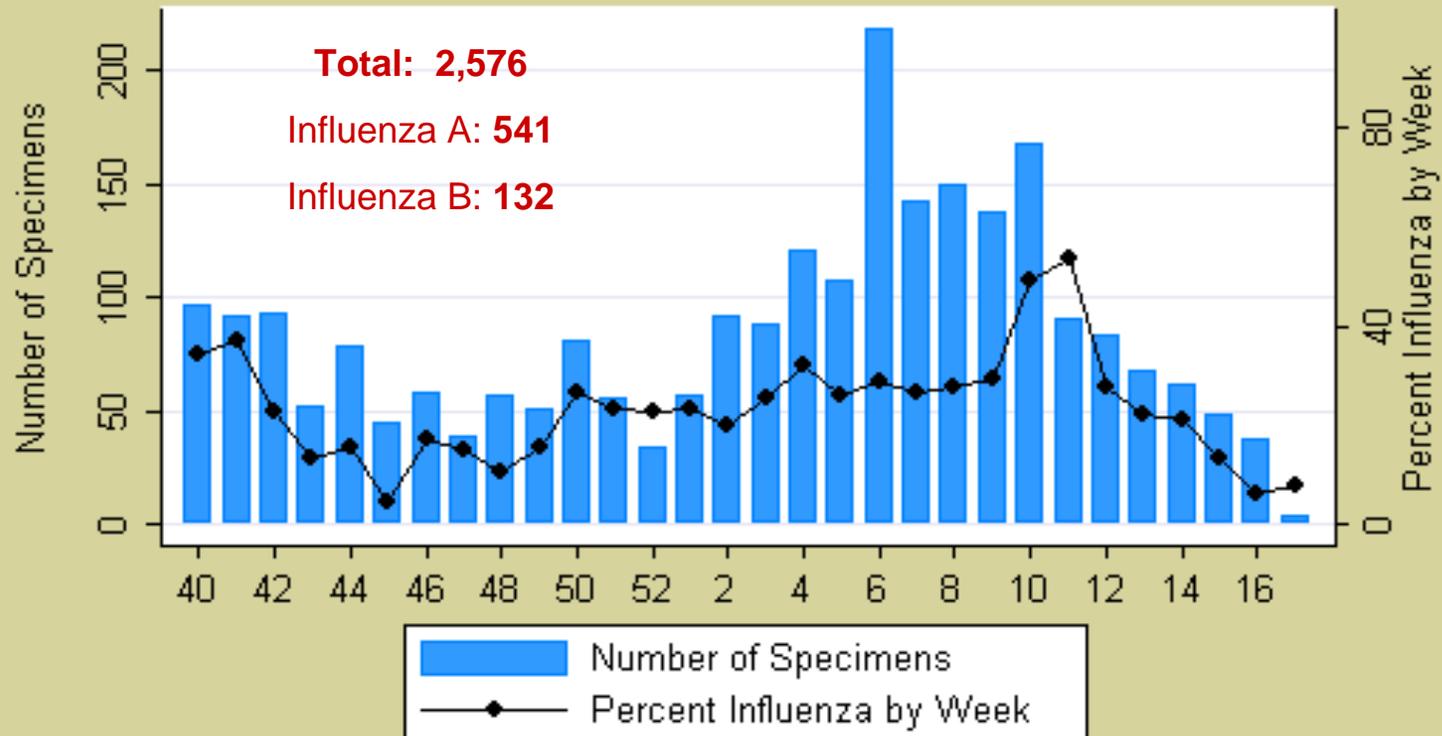
Results



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Summary of Submitted Specimens
All Sites by Week
Influenza Season 2006-2007



As Of 27 Apr 2007



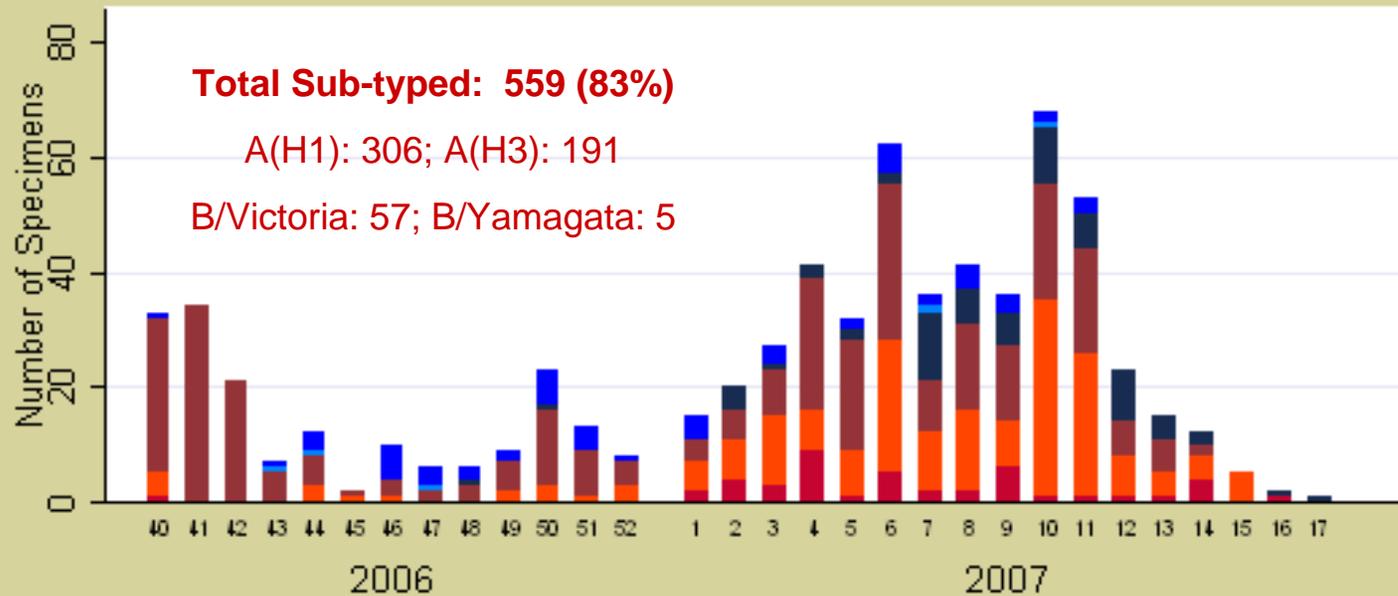
Methods



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Subtyping Results by Week and Year
Influenza Season 2006-2007



As Of 27 Apr 2007



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Products



CDC Department of Health and Human Services
Centers for Disease Control and Prevention

CDC en Español

Search: GO

Influenza (Flu)

[Flu Activity >](#)

Weekly Report: Influenza Summary Update

Week ending March 17, 2007-Week 11

Synopsis:

: During week 11 (March 11 – March 17, 2007)*, influenza activity continued to decrease in the United States. Data from the U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories indicated a decline in activity for the 11th consecutive week; 17.0% of specimens tested positive for influenza this week. ILI data was similar to the previous week and above baseline for the thirteenth week this season. Fifteen states reported widespread influenza activity; 22 states reported regional influenza activity; nine states, New York City, and the District of Columbia reported local influenza activity; and four states reported sporadic influenza activity. The reporting of widespread or regional influenza activity decreased from 42 for week 10 to 37 for week 11. The percent of deaths due to pneumonia and influenza remained below baseline level.

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Laboratory Surveillance*:

During week 11, WHO and NREVSS laboratories reported 3,631 specimens tested for influenza viruses, 616 (17.0%) of which were positive: 82 influenza A (H1) viruses, 59 influenza A (H3) viruses, 271 influenza A viruses that were not subtyped, and 194 influenza B viruses.

Since October 1, 2005, WHO and NREVSS laboratories have tested a total of 137,755 specimens for influenza viruses and 18,246 (13.2%) were positive. Among the 18,246 influenza viruses, 14,795 (81.1%) were influenza A viruses and 3,451 (18.9%) were influenza B viruses. Four thousand two hundred forty



al



Products



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Active Duty Influenza Immunization Status

Immunization Data collected by AFCITA

Data Status as of 23 Mar 2007 06:36

Notes: # Required counts the active duty AF personnel assigned to each base - excluding IMAs; If someone is both a student and in a GSU, they are counted only once in the student category; # Current only considers shots given on or after 1 July 2006

MAJCOM	Base	Regular					Student					GSU					Total				
		Req	Imm	Exempt	Nbr Curr	% Curr	Req	Imm	Exempt	Nbr Curr	% Curr	Req	Imm	Exempt	Nbr Curr	% Curr	Req	Imm	Exempt	Nbr Curr	% Curr
ACC	BARK	5,332	5,296	17	5,313	99.6%	207	201	1	202	97.6%	130	118	0	118	90.8%	5,669	5,615	18	5,633	99.4%
ACC	BEAL	3,225	3,180	8	3,188	98.9%	16	16	0	16	100.0%	9	3	0	3	33.3%	3,250	3,199	8	3,207	98.7%
ACC	CANN	2,839	2,802	7	2,809	98.9%	16	13	0	13	81.3%	7	0	0	0	0.0%	2,862	2,815	7	2,822	98.6%
ACC	DAVI	5,950	5,855	11	5,866	98.6%	72	69	0	69	95.8%	305	241	0	241	79.0%	6,327	6,165	11	6,176	97.6%
ACC	DYES	4,863	4,744	11	4,755	97.8%	83	74	0	74	89.2%	327	183	0	183	56.0%	5,273	5,001	11	5,012	95.1%
ACC	ELLS	3,027	2,970	3	2,973	98.2%	16	14	0	14	87.5%	0	0	0	0	0.0%	3,043	2,984	3	2,987	98.2%
ACC	HOLL	3,243	3,187	9	3,196	98.6%	7	7	0	7	100.0%	65	54	0	54	83.1%	3,315	3,248	9	3,257	98.3%
ACC	LANG	8,072	7,832	30	7,862	97.4%	71	41	0	41	57.7%	453	212	1	213	47.0%	8,596	8,085	31	8,116	94.4%
ACC	MEAD	2,088	2,045	10	2,055	98.4%	40	40	0	40	100.0%	24	16	0	16	66.7%	2,152	2,101	10	2,111	98.1%
ACC	MINO	4,425	4,377	17	4,394	99.3%	13	13	0	13	100.0%	0	0	0	0	0.0%	4,438	4,390	17	4,407	99.3%
ACC	MOOD	3,367	3,312	10	3,322	98.7%	54	43	0	43	79.6%	94	69	0	69	73.4%	3,515	3,424	10	3,434	97.7%
ACC	MOUN	4,068	3,988	12	4,000	98.3%	11	11	0	11	100.0%	25	8	0	8	32.0%	4,104	4,007	12	4,019	97.9%
ACC	NELL	7,057	6,833	20	6,853	97.1%	49	39	0	39	79.6%	1,003	941	4	945	94.2%	8,109	7,813	24	7,837	96.6%
ACC	OFFU	5,646	5,503	7	5,510	97.6%	337	307	0	307	91.1%	116	69	0	69	59.5%	6,099	5,879	7	5,886	96.5%
ACC	SEYM	4,050	3,944	9	3,953	97.6%	125	97	0	97	77.6%	46	22	0	22	47.8%	4,221	4,063	9	4,072	96.5%
ACC	SHAW	4,850	4,779	8	4,787	98.7%	102	76	0	76	74.5%	999	921	3	924	92.5%	5,951	5,776	11	5,787	97.2%
ACC	WHIT	3,232	3,224	3	3,227	99.8%	116	115	0	115	99.1%	50	48	0	48	96.0%	3,398	3,387	3	3,390	99.8%
		75,334	73,871	192	74,063	98.3%	1,335	1,176	1	1,177	88.2%	3,653	2,905	8	2,913	79.7%	80,322	77,952	201	78,153	97.3%
AETC	ALTU	1,470	1,445	13	1,458	99.2%	131	131	0	131	100.0%	4	3	0	3	75.0%	1,605	1,579	13	1,592	99.2%
AETC	COLU	845	829	11	840	99.4%	429	419	0	419	97.7%	147	104	1	105	71.4%	1,421	1,352	12	1,364	96.0%
AETC	GOOD	1,139	1,123	4	1,127	98.9%	715	690	1	691	96.6%	85	35	2	37	43.5%	1,939	1,848	7	1,855	95.7%
AETC	KEES	2,806	2,772	26	2,798	99.7%	1,415	1,383	1	1,384	97.8%	57	34	1	35	61.4%	4,278	4,189	28	4,217	98.6%
AETC	LACK	8,388	8,118	26	8,144	97.1%	2,663	2,349	0	2,349	88.2%	434	295	5	300	69.1%	11,485	10,762	31	10,793	94.0%
AETC	LAUC	852	844	4	845	99.1%	403	400	1	400	99.4%	0	0	0	0	0.0%	1,245	1,233	7	1,235	99.2%



Vaccine Coverage Overview



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➤ **Period of Review:**

01 October 2006 – 13 April 2007

➤ **Fully Vaccinated**

Vaccination date >14 days prior to clinic visit date

- ◆ Patients with vaccination date prior to August classified as unvaccinated
- ◆ Vaccination data gathered from Defense Enrollment Eligibility Reporting System (DEERS) and Influenza surveillance questionnaire

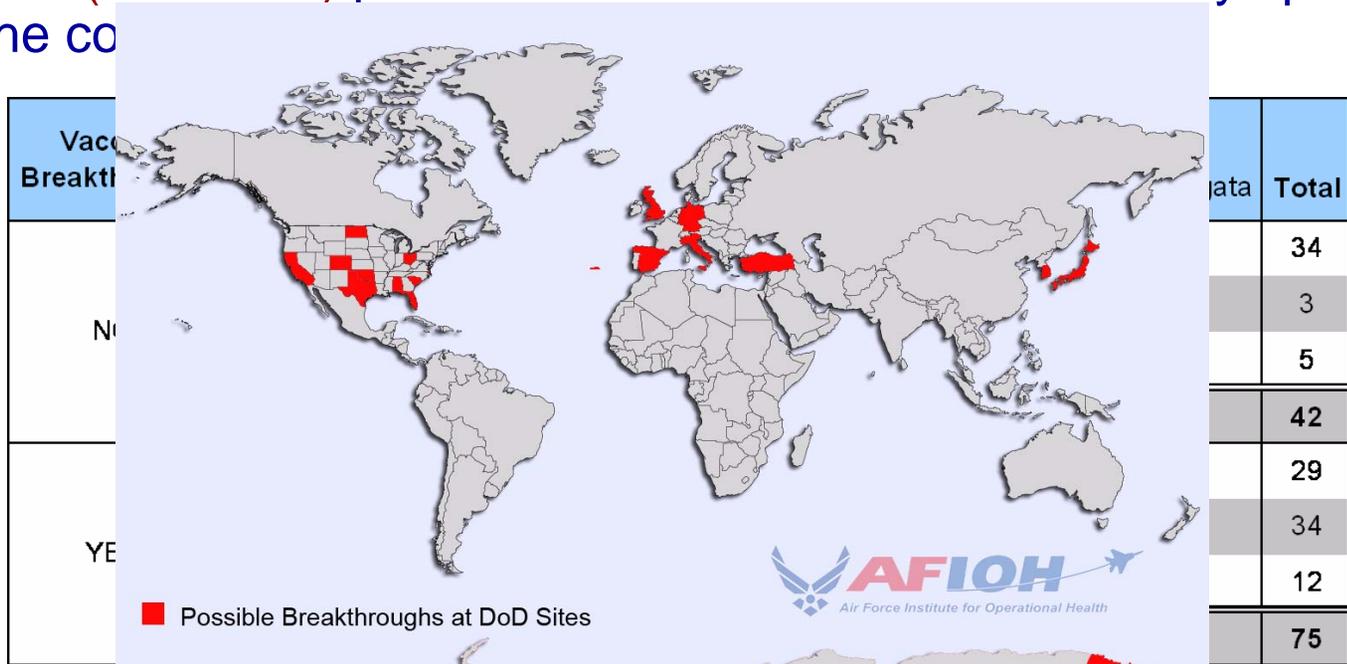


Vaccine Coverage Overview



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- Culture and/or PCR-confirmed influenza was observed in 19.4% (540 of 2,784) of the total respiratory samples submitted.
- Of these, 21.7% (117 of 540) had history of influenza vaccination during the 2006-2007 season.
- 64.1% (75 of 117) patients received the vaccine >14 days prior to the co





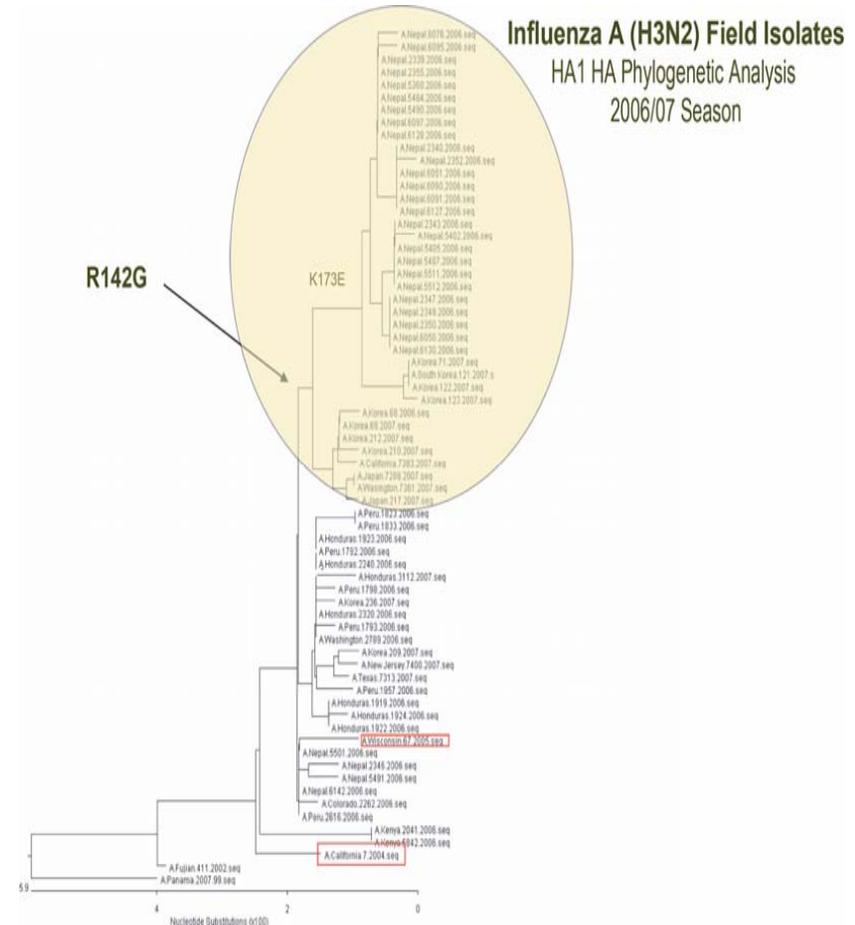
Vaccine Coverage Overview



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- Key influenza A/H3 isolates exhibited a R142G mutation, which has been characterized as a potential key contributor to the antigenicity of these strains.
- A small percentage of the isolates conferred mutations at several other of the reported antigenic sites.





Vaccine Coverage Overview



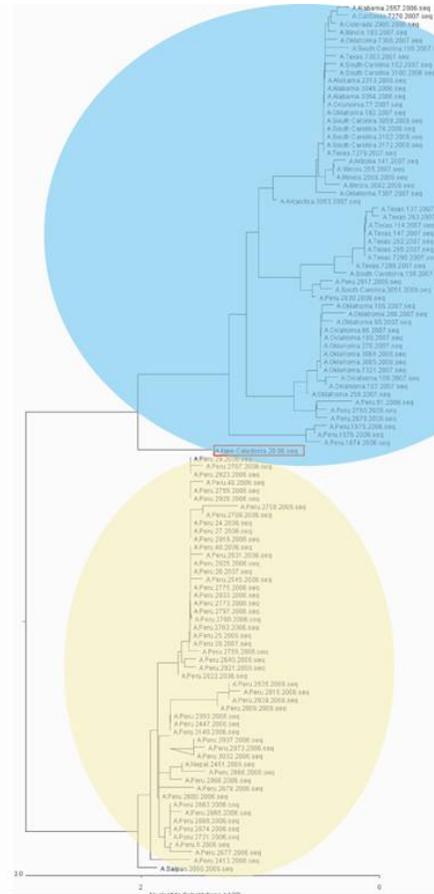
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Based on sequence analysis, a vast majority of the A/H1 isolates were homologous to the vaccine's New Caledonia component. However, there were a few divergent strains (Clade 2-like). Isolates from Clade 2 were obtained from CONUS.

CLADE 1

CLADE 2



Influenza A (H1N1) Field Isolates
HA1 HA Phylogenetic Analysis
2006/07 Season

Clade 1 isolates are from U.S. and Antarctica
HA is genetically similar to A/New Caledonia
vaccine strain (red box).



Vaccine Coverage Overview



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- **Conclusions:**

Of patients participating in the DoD Influenza Surveillance Program, 64% who had a history of influenza vaccination contracted an influenza infection >14 days post-vaccination.

Numerous influenza A isolates appeared to show certain genetic changes.

These changes have been of interest to the Centers for Disease Control and Prevention, where further characterization showed reduced hemagglutinin inhibition titers in some isolates.



Future



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➤ Molecular Characterization

- ✦ ID Tag (Luminex)
- ✦ Neuraminidase sequencing
 - ◆ Potential antiviral resistance characterization
- ✦ Hemagglutinin inhibition



Collaborators



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Global Emerging Infections Surveillance and Response System (GEIS)
Naval Health Research Center (NHRC)
Armed Forces Research Institute for Medical Sciences (AFRIMS)
Naval Medical Research Center-Detachment (NMRC-D)
US Army Medical Research Unit-Kenya (USAMRU-K)
Center for Health Promotion and Preventive Medicine-West (CHPPM-W)
Health Affairs
Combatant Commands (COCOM)
Military Surveillance sites
Centers for Disease Control and Prevention (CDC)
World Health Organization (WHO)



AFIOH Contacts



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E-mail: influenza@brooks.af.mil

Phone Contact

Epidemiology: (210) 536-3471; DSN 240

Laboratory: (210) 536-1679; DSN 240

Website:

<https://gumbo.brooks.af.mil/pestilence/Influenza/>