



MI Flu Focus

Influenza Surveillance Updates
Bureaus of Epidemiology and Laboratories

Michigan Department
of Community Health



Rick Snyder, Governor
James K. Haveman, Director

Editor: Susan Peters, DVM, MPH peterss1@michigan.gov
Surveillance and Infectious Disease Epidemiology

March 6, 2014
Vol. 11; No. 10

Current Influenza Activity Levels:

- **Michigan:** Local influenza activity
- **National:** During February 16-22, U.S. flu activity decreased, but remained elevated

Updates of Interest:

- **International:** Additional avian influenza H7N9 cases are reported from China
- **International:** 2 new MERS-CoV cases are reported from Saudi Arabia

Table of Contents

Influenza Surveillance Reports	
Michigan	1-3
National	3-4
International	4
Novel Influenza and Other News	
WHO Pandemic Phase	4
Avian Influenza in Humans	6-7
MERS-CoV	6

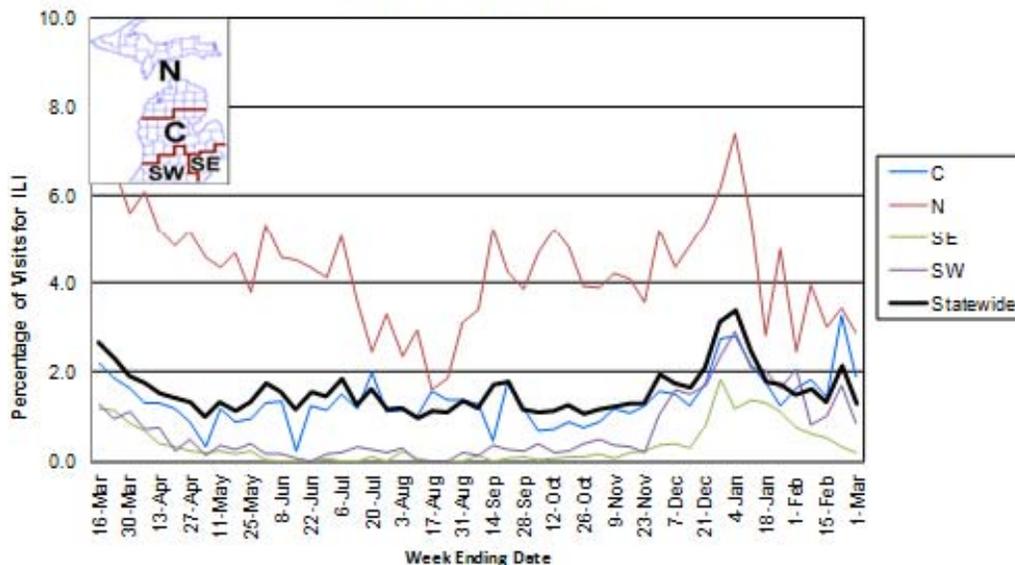
Influenza Surveillance Reports

Michigan Disease Surveillance System (as of March 6): MDSS influenza data for the week ending March 1, 2014 indicated that compared to levels from the previous week, aggregate reports remained steady and individual reports slightly decreased. Aggregate reports are significantly lower than levels seen during the same time period last year, while individual reports are moderately lower.

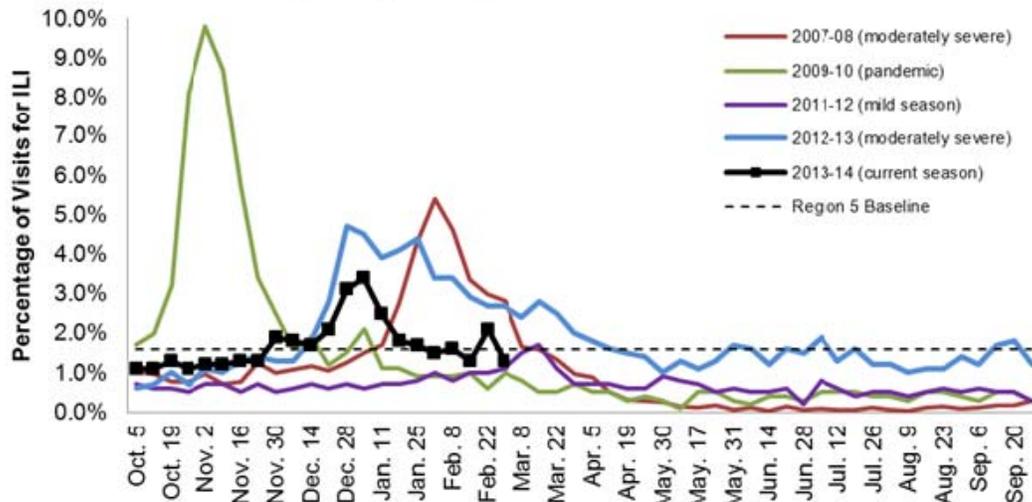
Emergency Department Surveillance (as of March 6): Emergency department visits due to constitutional complaints slightly decreased during the week ending March 1, 2014, while respiratory complaints remained steady. Emergency department visits from both constitutional and respiratory complaints are moderately lower than levels during the same time period last year. Both are at fall/winter baseline levels. In the past week, there were 5 constitutional alerts in the SW(1) and C(4) Influenza Surveillance Regions and 3 respiratory alerts in the SW(3) Region.

Sentinel Provider Surveillance (as of March 6): During the week ending March 1, 2014, the proportion of visits due to influenza-like illness (ILI) decreased to 1.3% overall; this is below the regional baseline (1.6%). A total of 118 patient visits due to ILI were reported out of 9,206 office visits. Data were provided by 30 sentinel sites from the following regions: Central (12), North (4), Southeast (11), and Southwest (3). ILI activity decreased in all four regions: C (1.9%), N (2.9%), SE (0.2%), and SW (0.9%). Please note: These rates may change as additional reports are received.

Percentage of Visits for Influenza-like Illness (ILI)
Reported by Sentinel Providers, Statewide and Regions
2013-14 Flu Season



Percentage of Visits for Influenza-like Illness (ILI) Reported by the US Outpatient Influenza-like Illness Surveillance Network (ILINet): Michigan, Select Seasons



As part of pandemic influenza surveillance, CDC and MDCH highly encourage year-round participation from all sentinel providers. New practices are encouraged to join the sentinel surveillance program today! Contact Stefanie DeVita at 517-335-3385 or DeVitaS1@michigan.gov for more information.

Hospital Surveillance (as of March 6): The CDC Influenza Hospitalization Surveillance Project provides population-based rates of severe influenza illness through active surveillance and chart review of lab-confirmed cases, starting on October 1, 2013, for Clinton, Eaton, Genesee, and Ingham counties. 6 new cases (1 pediatric, 5 adult) were identified since the last report. As of March 6th, there have been 206 influenza hospitalizations (56 pediatric, 150 adult) within the catchment area. Based on these counts, there are 27.9 pediatric influenza hospitalizations/100,000 population and 22.0 adult influenza hospitalizations/100,000 population within the catchment area.

The MDCH Influenza Sentinel Hospital Network monitors influenza hospitalizations reported voluntarily by hospitals statewide. 6 hospitals (SE,SW,C,N) reported for the week ending March 1, 2014. Results are listed in the table below.

Age Group	Hospitalizations Reported During the Previous Week	Total Hospitalizations 2013-14 Season
0-4 years	1 (1C)	50 (7SE,2SW,38C,3N)
5-17 years	0	20 (1SE,19C)
18-49 years	2 (2C)	108 (60SE,3SW,37C,8N)
50-64 years	1 (1SW)	130 (82SE,5SW,30C,13N)
≥65 years	1 (1SW)	102 (66SE,6SW,14C,16N)
Total	5 (2SW,3C)	410 (216SE,16SW,138C,40N)

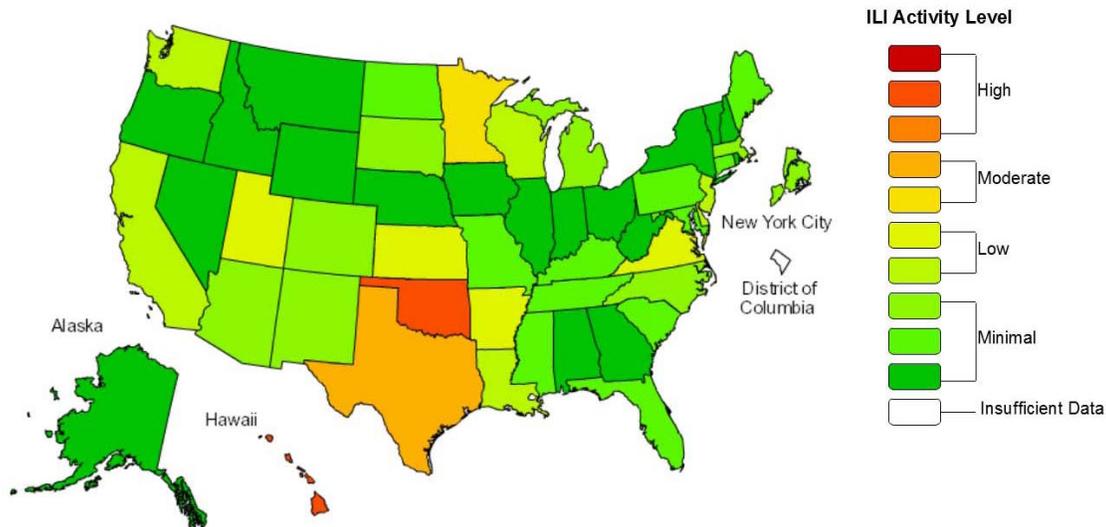
Laboratory Surveillance (as of March 1): During February 23-March 6, 10 influenza 2009 A/H1N1pdm (1SE,7SW,2C) and 2 B (1SE,1SW) results were reported by MDCH Bureau of Laboratories. For the 2013-14 season (starting Sept. 29, 2013), MDCH has identified 339 positive influenza results:

- Influenza 2009 A/H1N1pdm: 315 (66SE,119SW,92C,38N)
- Influenza A/H3: 12 (9SE,2SW,1C)
- Influenza A unsubtypeable: 1 (1SE)
- Influenza A and B (LAIV recovery): 1 (1SE)
- Influenza B: 12 (7SE,3SW,2C)
- Adenovirus: 1 (1SE)
- Parainfluenza: 2 (1SE,1SW)
- Human metapneumovirus: 4 (4SW)

14 sentinel labs (SE,SW,C,N) reported for the week ending March 1, 2014. 12 labs (SE,SW,C,N) had steady or decreasing influenza A activity. 5 labs (SE,SW,C,N) reported sporadic influenza B activity. 3 labs (SE,SW) had sporadic parainfluenza activity. 13 labs (SE,SW,C,N) had steady or moderate RSV activity. 5 labs (SE,SW,C) reported sporadic or low hMPV activity. 2 labs (SE,SW) had sporadic or low adenovirus activity. Testing volumes at most sites are declining, but overall levels remain moderate to high.

Michigan Influenza Antigenic Characterization (as of March 6): For the 2013-14 season, 2 Michigan influenza specimens (2C) have been characterized at CDC as A/California/07/2009-like/H1N1/ pdm09,

**Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2013-14 Influenza Season Week 8 ending Feb 22, 2014**



This map uses the proportion of outpatient visits to healthcare providers for influenza-like illness to measure the ILI activity level within a state. Therefore, outbreaks occurring in a single city could cause the state to display high activity levels. Data collected in ILINet may disproportionately represent certain populations within a state, and therefore, may not accurately depict the full picture of influenza activity for the whole state. Data displayed on this map are based on data collected in ILINet, whereas the State and Territorial flu activity map are based on reports from state and territorial epidemiologists.

Complete weekly FluView reports are available online at: <http://www.cdc.gov/flu/weekly/>.

International (WHO [edited], February 24): In North America, influenza A(H1N1)pdm09 virus remained predominant. Influenza activity continued decreasing in Canada, Mexico and the United States of America, but remained at elevated levels. In Europe, overall influenza activity remained elevated. Trends suggest the wave of influenza activity is moving from south to north overall, with both influenza A viruses circulating. In Eastern Asia, activity remained high with influenza A(H1N1)pdm09 predominant. In Northern Africa and Western Asia, activity was variable, with Egypt reporting high activity of A(H1N1)pdm09 and increased number of severe cases. Based on FluNet reporting (as of 24 February), during 26 January to 8 February 2014, National Influenza Centres and other national labs from 93 countries, areas or territories reported data. The WHO GISRS labs tested more than 87378 specimens. 20777 were positive for influenza, of which 18487 (89%) were typed as influenza A and 2290 (11%) as B. Of the sub-typed A viruses, 9141 (77%) were A(H1N1)pdm09, 2735 (23%) were A(H3N2) and 1 (0%) was A(H5N1). Of the characterized B viruses, 127 (74.7%) belong to the B-Yamagata lineage and 43 (25.3%) to the B-Victoria lineage.

The full report is online at www.who.int/influenza/surveillance_monitoring/updates/latest_update_GIP_surveillance/en/index.html.

MDCH reported LOCAL INFLUENZA ACTIVITY to CDC for the week ending March 1, 2014.

For additional flu vaccination and education information, the MDCH *FluBytes* newsletter is available at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_22779_40563-125027--,00.html.

Novel Influenza Activity and Other News

WHO Pandemic Phase: Post-pandemic – Influenza disease activity has returned to levels normally seen for seasonal influenza.

National, Human (The Pediatric Infectious Disease Journal abstract, February 26): The Burden of Influenza Hospitalizations in Infants from 2003- 2012, United States. Chaves S.S., et al. *Pediatr Infect Dis J.* 2014 Feb 26. [Epub ahead of print]

Background: Little information is available describing the epidemiology and clinical characteristics of those <12 months hospitalized with influenza, particularly at a population level.

Methods: We used population-based, laboratory-confirmed influenza hospitalization surveillance data from 2003-2012 seasons to describe the impact of influenza by age category (<3, 3 to <6 and 6 to <12 months). Logistic regression was used to explore risk factors for intensive care unit (ICU) admission. Adjusted age specific influenza-associated hospitalization rates were calculated and applied to the number of U.S. infants to estimate national numbers of hospitalizations.

Results: Influenza was associated with an annual average of 6,514 infant hospitalizations (range 1,842-12,502). Hospitalization rates among infants <3 months were substantially higher than the rate in older infants. Most hospitalizations occurred in otherwise healthy infants (75%) among whom up to 10% were admitted to the ICU and up to 4% had respiratory failure. These proportions were 2-3 times higher in infants with high risk conditions. Infants <6 months were 40% more likely to be admitted to the ICU than older infants. Lung disease (adjusted odds ratio [aOR] 1.80; 95% confidence interval [CI] 1.22, 2.67), cardiovascular disease (aOR 4.16; 95% CI 2.65, 6.53), and neuromuscular disorder (aOR 2.99; 95% CI 1.87, 4.78) were risk factors for ICU admission among all infants.

Conclusions: The impact of influenza on infants, particularly those very young or with high risk conditions, underscore the importance of influenza vaccination, especially among pregnant women and those in contact with young infants not eligible for vaccination.

The abstract is available online at

http://journals.lww.com/pidj/Abstract/publishahead/The_Burden_of_Influenza_Hospitalizations_in.98067.a.spx.

National, Human (Influenza and Other Respiratory Diseases abstract, January): Influenza Outbreak Control Practices and the Effectiveness of Interventions in Long-term Care Facilities: A Systematic Review. Kaitlin Rainwater-Lovett K., Chun K., Lessler J. *Influenza Resp Viruses*. 2014;8(1):74-82.

Background: Evaluation of influenza control measures frequently focuses on the efficacy of chemoprophylaxis and vaccination, while the effectiveness of non-pharmaceutical interventions (NPI) receives less emphasis. While influenza control measures are frequently reported for individual outbreaks, there have been few efforts to characterize the real-world effectiveness of these interventions across outbreaks.

Objectives: To characterize influenza case and outbreak definitions and control measures reported by long-term care facilities (LTCFs) of elderly adults and estimate the reduction in influenza-like illness (ILI) attack rates due to chemoprophylaxis and NPI.

Methods: We conducted a literature search in PubMed including English-language studies reporting influenza outbreaks among elderly individuals in LTCFs. A Bayesian hierarchical logistic regression model estimated the effects of control measures on ILI attack rates.

Results: Of 654 articles identified in the literature review, 37 articles describing 60 influenza outbreaks met the inclusion criteria. Individuals in facilities where chemoprophylaxis was used were significantly less likely to develop influenza A or B than those in facilities with no interventions [odds ratio (OR) 0.48, 95% CI: 0.28, 0.84]. Considered by drug class, adamantanes significantly reduced infection risk (OR 0.22, 95% CI: 0.12, 0.42), while neuraminidase inhibitors did not show a significant effect. Although NPI showed no significant effect, the results suggest that personal protective equipment may produce modest protective effects.

Conclusions: Our results indicate pharmaceutical control measures have the clearest reported protective effect in LTCFs. Non-pharmaceutical approaches may be useful; however, most data were from observational studies and standardized reporting or well-conducted clinical trials of NPI are needed to more precisely measure these effects.

The full article is available online at <http://onlinelibrary.wiley.com/doi/10.1111/irv.12203/full>.

National, Immunization (MMWR abstract, March 6): Impact of Requiring Influenza Vaccination for Children in Licensed Child Care or Preschool Programs — Connecticut, 2012–13 Influenza Season. Hadler JL, et al. *MMWR*. March 7, 2014/63(09);181-185.

Preschool-aged children are at increased risk for severe influenza-related illness and complications. Congregate child care settings facilitate influenza transmission among susceptible children. To protect against influenza transmission in these settings, in September 2010, Connecticut became the second U.S. state (after New Jersey) to implement regulations requiring that all children aged 6–59 months receive at least 1 dose of influenza vaccine each year to attend a licensed child care program. To evaluate the impact of this regulation on vaccination levels and influenza-associated hospitalizations during the 2012–13 influenza season, vaccination data from U.S. and Connecticut surveys and the Emerging Infections Program (EIP) were analyzed. After the regulation took effect, vaccination rates among Connecticut children aged 6–59 months increased from 67.8% during the 2009–10 influenza season to 84.1% during the 2012–13 season. During the 2012–13 influenza season, among all 11 EIP surveillance sites, Connecticut had the greatest percentage decrease (12%) in the influenza-associated hospitalization rate from 2007–08 among children aged ≤4 years. Additionally, the ratio of the influenza-associated hospitalization rates among children aged ≤4 years to the overall population rate (0.53) was lower than for any other EIP site. Requiring vaccination for child care admission might have helped to increase vaccination rates in Connecticut and reduced serious morbidity from influenza.

The full article is available online at <http://www.cdc.gov/mmwr/pdf/wk/mm6309.pdf>.

International, Human (WHO [edited], March 3): On 27 February, 28 February and 1 March 2014, the National Health and Family Planning Commission (NHFP) of China notified WHO of eight additional laboratory-confirmed case of human infection with avian influenza A(H7N9) virus.

The full report is available online at http://www.who.int/csr/don/2014_03_03/en/.

International, Human (WHO [edited], March 5): On 4 March 2014, the National Health and Family Planning Commission (NHFP) of China notified WHO of an additional laboratory-confirmed case of human infection with avian influenza A(H7N9) virus.

The patient is a 59 year-old man from Zhuhai City, Guangdong Province. He became ill on 26 February, was admitted to a hospital on 1 March and died on 2 March. The patient has a history of exposure to live poultry.

The full report is available online at http://www.who.int/csr/don/2014_03_05/en/.

International, MERS-CoV (WHO [edited], February 28): On 3 and 15 February 2014, the Ministry of Health of Saudi Arabia announced two additional laboratory-confirmed cases of Middle East respiratory syndrome coronavirus (MERS-CoV) infection.

Details of the cases provided to WHO are as follows:

A 22-year-old man from the Eastern Region. He became ill on 3 February and was hospitalised on 9 February and died on 12 February 2014. The patient had an underlying medical condition. He had no reported history of contact with animals or a previously laboratory-confirmed case.

A 67-year-old man from Riyadh. He became ill on 23 January and was hospitalised on 25 January. The patient had an underlying medical condition. He had no reported history of contact with animals or with a previously laboratory-confirmed case.

Globally, from September 2012 to date, WHO has been informed of a total of 184 laboratory-confirmed cases of infection with MERS-CoV, including 80 deaths.

The full report is available online at http://www.who.int/csr/don/2014_02_28/en/.

International, Poultry (OIE [edited], February 28): Low pathogenic avian influenza H5N1; Netherlands Outbreak 1: Swifterbant, FLEVOLAND; Date of start of the outbreak: 26/02/2014
Epidemiological unit: Farm; Species: Birds; Susceptible: 40327; Destroyed: 40237

International, Poultry (OIE [edited], February 28): Highly pathogenic avian influenza H5N8; Korea Summary of outbreaks: Total outbreaks: 12
Species: Birds; Susceptible: 321280; Cases: 31284; Deaths: 12067; Destroyed: 309213

International, Poultry (OIE [edited], February 28): Low pathogenic avian influenza H7N9; China

Outbreak 1: Gelin new city livebird market, Changsha, HUNAN; Date of start of the outbreak:15/02/2014
 Species: Birds; Susceptible: 138; Cases: 1; Deaths: 0; Destroyed: 138
 Affected population: 40 samples were collected from the live bird market (including 13 chicken samples, 12 duck samples and 15 environment samples) according to the national surveillance plan and no clinical signs were found. One chicken sample tested positive.

Outbreak 2: Chengbei livebird market, Shuangfeng, Loudi, HUNAN; Date of start of outbreak: 15/02/2014
 Species: Birds; Susceptible: 22; Cases: 1; Deaths: 0; Destroyed: 22
 Affected population: 45 chicken samples were collected from the live bird market according to the national surveillance plan and no clinical signs were found. One chicken sample was tested positive.

International, Poultry (OIE [edited], March 1): Highly pathogenic avian influenza H5N1; Vietnam
 Summary of outbreaks: Total outbreaks: 4
 Total animals affected: Species: Birds; Susceptible: 11305; Cases: 5270; Deaths: 3742; Destroyed: 7563

International, Poultry (OIE [edited], March 6): Highly pathogenic avian influenza H5N1; Vietnam
 Outbreak 1: Binh Duong, BINH DUONG; Date of start of the outbreak: 03/03/2014
 Epidemiological unit: Village; Species: Birds; Susceptible: 710; Cases: 477; Deaths: 300; Destroyed: 410

Outbreak 2: Phuoc Thai, Phuoc Thai, Ninh Phuoc, NINH THUAN; Date of start of outbreak: 05/03/2014
 Epidemiological unit: Village; Species: Birds; Susceptible: 500; Cases: 300; Deaths: 300; Destroyed: 200

International Poultry and Wild Bird Surveillance (OIE): Reports of avian influenza activity, including summary graphs of avian influenza H5N1 outbreaks in poultry, can be found at the following website:
http://www.oie.int/download/AVIAN%20INFLUENZA/A_AI-Asia.htm.

For questions or to be added to the distribution list, please contact Susan Peters at peterss1@michigan.gov

MDCH Contributors

Bureau of Epidemiology – S. Bidol, MPH, S. DeVita, RN, MPH; Bureau of Labs – B. Robeson, MT, V. Vavricka, MS

Table. H5N1 Influenza in Humans – As of January 24, 2014. http://www.who.int/influenza/human_animal_interface/EN_GIP_20130124_CumulativeNumberH5N1cases.pdf. Downloaded 02/05/2014. Cumulative lab-confirmed cases reported to WHO. Total cases include deaths.

Country	2003-2010		2011		2012		2013		2014		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Azerbaijan	8	5	0	0	0	0	0	0	0	0	8	5
Bangladesh	1	0	2	0	3	0	1	1	0	0	7	1
Cambodia	10	8	8	8	3	3	26	14	0	0	47	33
Canada	0	0	0	0	0	0	1	1	0	0	1	1
China	40	26	1	1	2	1	2	2	0	0	45	30
Djibouti	1	0	0	0	0	0	0	0	0	0	1	0
Egypt	119	40	39	15	11	5	4	3	0	0	173	63
Indonesia	171	141	12	10	9	9	3	3	0	0	195	163
Iraq	3	2	0	0	0	0	0	0	0	0	3	2
Lao PDR	2	2	0	0	0	0	0	0	0	0	2	2
Myanmar	1	0	0	0	0	0	0	0	0	0	1	0
Nigeria	1	1	0	0	0	0	0	0	0	0	1	1
Pakistan	3	1	0	0	0	0	0	0	0	0	3	1
Thailand	25	17	0	0	0	0	0	0	0	0	25	17
Turkey	12	4	0	0	0	0	0	0	0	0	12	4
Vietnam	119	59	0	0	4	2	2	1	1	1	126	63
Total	516	306	62	34	32	20	39	25	1	1	650	386