



MI Flu Focus

Influenza Surveillance Updates
Bureaus of Epidemiology and Laboratories

Michigan Department
of Community Health



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Current Influenza Activity Levels:

- **Michigan:** Regional activity
- **National:** During week 50 (December 9-15), influenza activity increased in the U.S.

Updates of Interest

- **National:** The FDA expanded the approved use of Tamiflu (oseltamivir) to treat children as young as 2 weeks old with symptoms of flu

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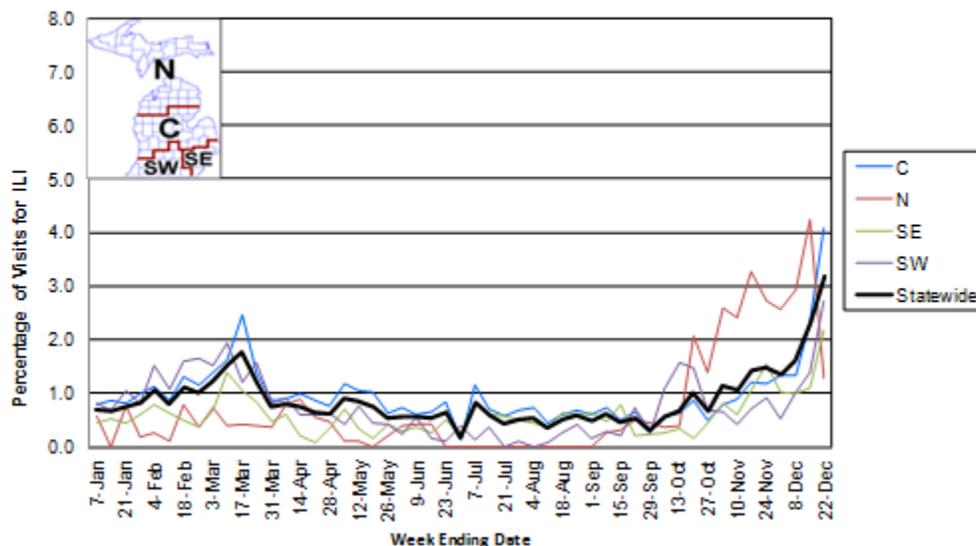
Influenza Surveillance Reports

Michigan Disease Surveillance System (as of December 27): MDSS data for the week ending December 22nd indicated that compared to levels from the previous week, individual reports increased and aggregate reports decreased. The decrease in aggregate reports is most likely due to the school holiday breaks. Aggregate reports are similar when compared to levels seen during the same time period last year, while individual reports are significantly increased.

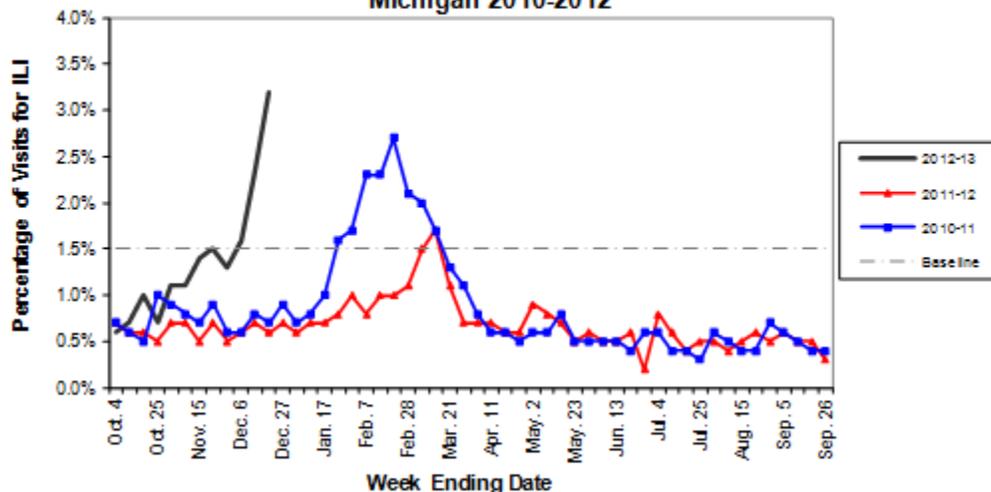
Emergency Department Surveillance (as of December 27): Compared to levels from the week prior, emergency department visits from constitutional complaints sharply increased, while respiratory complaints slightly increased. Constitutional complaints are noticeably higher than levels reported during the same time period last year, while respiratory complaints are similar. In the past week, there were 22 constitutional alerts in the SE(2), SW(9), C(8) and N(3) Influenza Surveillance Regions and 3 statewide alerts and 3 respiratory alerts in the SE(1) and C(2) Regions.

Sentinel Provider Surveillance (as of December 27): During the week ending December 22, 2012, the proportion of visits due to influenza-like illness (ILI) increased to 3.2% overall; this is above the regional baseline (1.5%). A total of 135 patient visits due to ILI were reported out of 4,246 office visits. Data were provided by only 16 sentinel sites from the following regions: C (7), N (2), SE (5) and SW (2). ILI activity increased in three surveillance regions: Central (4.1%), Southeast (2.2%) and Southwest (2.7%); and decreased in the North (1.3%) surveillance region. 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
2011-2012 and 2012-13 Flu Seasons



Percentage of Visits for Influenza-like Illness (ILI) Reported by the US Outpatient Influenza-like Illness Surveillance Network (ILINet): Michigan 2010-2012



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 Cristi Carlton at 517-335-9104 or CarltonC2@michigan.gov for more information.

Hospital Surveillance (as of December 22): 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, 2012, in the Clinton, Eaton, Genesee, and Ingham counties. 8 new cases were identified during the past week. As of December 22nd, there have been 17 influenza hospitalizations (9 adult, 8 pediatric) within the catchment area.

The MDCH Influenza Sentinel Hospital Network monitors influenza hospitalizations reported voluntarily by hospitals statewide. 9 hospitals (SE, SW, C, N) reported for the week ending December 22, 2012. Results are listed in the table below.

Age Group	Hospitalizations Reported During Current Week	Total Hospitalizations 2012-13 Season
0-4 years	2 (2C)	4 (1SE, 3C)
5-17 years	0	4 (2SE, 1C, 1N)
18-49 years	0	3 (2SE, 1N)
50-64 years	2 (2SE)	4 (3SE, 1N)
≥65 years	4 (3SE, 1SW)	8 (4SE, 2SW, 2N)
Total	8 (5SE, 1SW, 2C)	23 (12SE, 2SW, 4C, 5N)

Laboratory Surveillance (as of December 22): During December 16-22, 85 positive influenza A/H3 results (18SE, 28SW, 27C, 12N), 1 2009 A/H1N1pdm (1SE) and 17 influenza B (6SE, 1SW, 5C, 5N) results were reported by MDCH BOL. For the 2012-13 season (starting Sept. 30, 2012), MDCH has identified 252 influenza results:

- Influenza A(H3): 209 (54SE, 79SW, 49C, 23N)
- Influenza A(H1N1)pdm09: 5 (4SE, 1N)
- Influenza B: 42 (13SE, 9SW, 13C, 7N)
- Parainfluenza: 7 (3SW, 4N)
- RSV: 1 (1N)

16 sentinel labs (SE, SW, C, N) reported for the week ending December 22, 2012. 15 labs (SE, SW, C, N) reported flu A activity; activity ranged from low to moderate but was increasing overall. 11 labs (SE, SW, C, N) had low or increasing flu B activity. 4 labs (SE, SW) had low parainfluenza activity. 11 labs (SE, SW, C) had RSV activity; 1 was at moderate activity. 3 labs (SE, SW) reported sporadic HMPV activity. Testing volumes continue to increase, with most sites at moderate to high levels.

Michigan Influenza Antigenic Characterization (as of December 27): For the 2012-13 season, 8 Michigan influenza B specimens have been characterized at MDCH BOL. 7 specimens are B/Wisconsin/01/2010-like, matching the B component of the 2012-13 influenza vaccine. 1 influenza B specimen was characterized as B/Brisbane/60/2008-like, which is not included in the 2012-13 vaccine.

Michigan Influenza Antiviral Resistance Data (as of December 27): For the 2012-13 season, no influenza isolates have been tested for antiviral resistance.

CDC has made recommendations regarding the use of antivirals for treatment and prophylaxis of influenza, which are available at <http://www.cdc.gov/flu/professionals/antivirals/index.htm>.

Influenza-associated Pediatric Mortality (as of December 27): Two pediatric influenza-associated influenza mortalities (1 A/H3, 1B) have been reported to MDCH for the 2012-13 season.

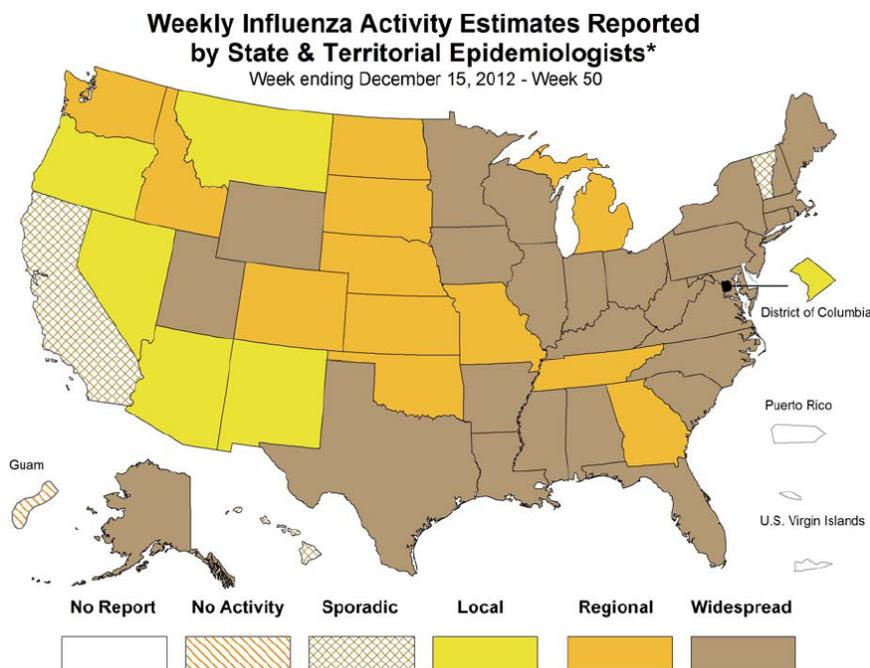
CDC requires reporting of flu-associated pediatric deaths (<18 yrs), including pediatric deaths due to an influenza-like illness with lab confirmation of influenza or any unexplained pediatric death with evidence of an infectious process. Contact MDCH immediately for proper specimen collection. The MDCH protocol is at www.michigan.gov/documents/mdch/ME_pediatric_influenza_guidance_v2_214270_7.pdf.

Influenza Congregate Settings Outbreaks (as of December 27): One new outbreak due to influenza A in a long term care facility (SW) was reported to MDCH during the past week. 16 respiratory outbreaks (7SW, 5C, 4N) have been reported to MDCH during the 2012-13 season; testing results are listed below.

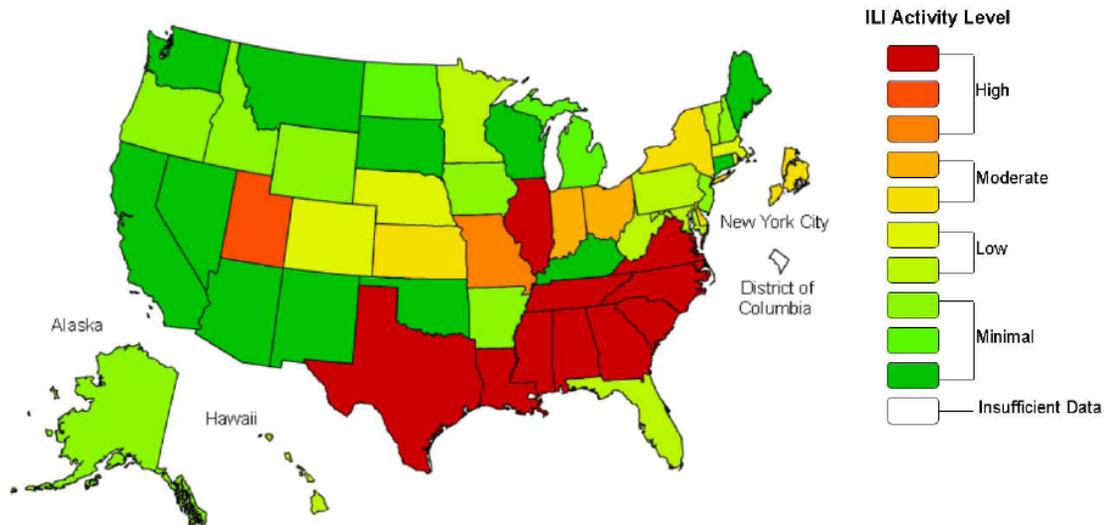
- Influenza A/H3: 1 (1C)
- Influenza A: 4 (3SW, 1C)
- Influenza B: 3 (2SW, 1C)
- Influenza positive: 1 (1C)
- Negative/testing not performed: 7 (2SW, 1C, 4N)

National (CDC [edited], December 21): During week 50 (December 9-15), influenza activity increased in the U.S. Of 9,562 specimens tested and reported by U.S. WHO and NREVSS collaborating laboratories in week 50, 2,709 (28.3%) were positive for influenza. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the epidemic threshold. Two influenza-associated pediatric deaths were reported. One was associated with an influenza A (H3) virus and one was associated with an influenza A virus for which the subtype was not determined. The proportion of outpatient visits for influenza-like illness (ILI) was 3.2%; above the national baseline of 2.2%. Nine of ten regions reported ILI above region-specific baseline levels. Twelve states experienced high ILI activity, New York City and 5 states experienced moderate ILI activity; 11 states experienced low ILI activity; 22 states experienced minimal ILI activity, and the District of Columbia had insufficient data. Twenty-nine states reported widespread geographic influenza activity; 12 states reported regional activity; the District of Columbia and 5 states reported local activity; 3 states reported sporadic activity; Guam reported no influenza activity, and Puerto Rico, the U.S. Virgin Islands, and 1 state did not report.

Between October 1, 2012 and December 15, 2012, 1,013 laboratory-confirmed influenza-associated hospitalizations were reported. This is a rate of 3.6 per 100,000 population. Among all hospitalizations, 811 (80.1%) were associated with influenza A and 188 (18.6%) with influenza B. There was no virus type information for 13 (1.3%) hospitalizations. Among hospitalizations with influenza A subtype information, 218 (97.3%) were attributed to H3 and 6 (2.7%) were attributed to 2009 H1N1. The most commonly reported underlying medical conditions among hospitalized adults were metabolic conditions, cardiovascular disease, obesity, and chronic lung disease (excluding asthma). Among 17 hospitalized women of childbearing age (15-44 years), four were pregnant. The most commonly reported underlying medical conditions in hospitalized children were asthma, neurologic disorders, cardiovascular disease, and immune suppression. Approximately 40% of hospitalized children had no identified underlying medical conditions. Additional data is at: <http://gis.cdc.gov/GRASP/Fluview/FluHospRates.html>.



**Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2012-13 Influenza Season Week 50 ending Dec 15, 2012**



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.

The complete FluView report is available online at <http://www.cdc.gov/flu/weekly/fluactivity.htm>.

International (WHO [edited], December 21): Many countries in the temperate regions of the northern hemisphere are now reporting elevated detections of influenza, particularly in north America. Influenza activity was still low in Europe, with co-circulating of both influenza A and B viruses. However increased influenza-like illnesses were reported in more countries than previous weeks. There was low, but increasing influenza activity in northern Africa and the Eastern Mediterranean regions, and sporadic detections in eastern Asia. Influenza in central America, the Caribbean and tropical south America continued to decline, with low levels of circulation of mainly influenza A(H3N2) and some influenza B viruses, except for Cuba and Peru, where influenza A(H1N1)pdm09 was predominant. Influenza activity in Sub-Saharan Africa declined to low levels, with mainly influenza B, except in Ghana, where influenza A(H1N1)pdm09 was reported. Influenza in most South East Asian countries was declining, except in Sri Lanka and Viet Nam. Influenza activity in the temperate countries of the southern hemisphere continued at inter-seasonal levels.

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

MDCH reported REGIONAL FLU ACTIVITY to CDC for the week ending December 22, 2012.

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. It is expected that the pandemic virus will behave as a seasonal influenza A virus. It is important to maintain surveillance and update pandemic preparedness/response plans accordingly.

National, Antivirals (FDA press release [edited], December 21): The U.S. Food and Drug Administration today expanded the approved use of Tamiflu (oseltamivir) to treat children as young as 2 weeks old who have shown symptoms of flu for no longer than two days.

The drug is not approved to prevent flu infection in this population. In addition, the safety and efficacy of Tamiflu to treat flu infection has not been established in children younger than 2 weeks old.

Tamiflu was approved in 1999 to treat adults infected with flu who have shown symptoms for no longer than two days. It has since been approved to treat flu in children ages 1 year and older who have shown symptoms of flu for no longer than two days, and to prevent flu in adults and children ages 1 year and older.

Although there is a fixed dosing regimen for patients 1 year and older according to weight categories, the dosing for children younger than 1 year must be calculated for each patient based on their exact weight. These children should receive 3 milligrams per kilogram twice daily for five days. These smaller doses will require a different dispenser than what is currently co-packaged with Tamiflu.

“Pharmacists must provide the proper dispenser when filling a prescription so parents can measure and administer the correct dose to their children,” said Edward Cox, M.D., M.P.H., director of the Office of Antimicrobial Products in the FDA’s Center for Drug Evaluation and Research. “Parents and pediatricians must make sure children receive only the amount of Tamiflu appropriate for their weight.”

Tamiflu is the only product approved to treat flu infection in children younger than 1 year old, providing an important treatment option for a vulnerable population. According to the Centers for Disease Control and Prevention (CDC), children younger than 2 years are at higher risk for developing complications from the flu, with the highest rates of hospitalization in those less than 6 months of age.

The FDA expanded the approved use of Tamiflu in children younger than 1 year based on extrapolation of data from previous study results in adults and older children, and additional supporting safety and pharmacokinetic studies sponsored by both the National Institutes of Health and Roche Group, Tamiflu’s manufacturer.

Pediatric legislation permits efficacy to be extrapolated from previous study results in adults and older children if the illness being studied and the effects of the drug are sufficiently similar in adult and pediatric patients. Data on how the drug is metabolized in the body (pharmacokinetic data) indicated a dose of 3 mg/kg twice daily provided concentrations of Tamiflu similar to those observed in older children and adults, and is expected to provide similar efficacy in this very young age group.

Almost all of the 135 pediatric patients enrolled in the two safety studies had confirmed flu. Results from these studies showed the safety profile in children younger than 1 year was consistent with the established safety profile of adults and older children. The most common side effects reported with Tamiflu use in this age group include vomiting and diarrhea. Although not seen in the new studies, rare cases of severe rash, skin reactions, hallucinations, delirium, and abnormal behavior have been reported.

The full press release is at www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm333205.htm.

International, Swine (American Society for Microbiology press release, December 19): Researchers report for the first time the seroprevalence of three strains of avian influenza viruses in pigs in southern China, but not the H5N1 avian influenza virus. Their research, published online ahead of print in the *Journal of Clinical Microbiology*, has implications for efforts to protect the public health from pandemics.

Influenza A virus is responsible both for pandemics that have killed millions worldwide, and for the much less severe annual outbreaks of influenza. Because pigs can be infected with both human and avian influenza viruses, they are thought to serve as "mixing vessels" for genetic reassortment that could lead to pandemics, and pigs have been infected experimentally by all avian H1-H13 subtypes. But natural transmission of avian influenza to pigs has been documented only rarely.

In the study, from 2010-2012, Guihong Zhang and colleagues of the College of Veterinary Medicine, South China Agricultural University, Guangzhou, People's Republic of China, tested 1080 21-25 week old pigs for H3, H4, H5, and H6 subtypes of avian influenza virus, and H1 and H3 subtypes of swine influenza virus. Thirty-five percent of the serum samples were positive for H1N1, and 19.7 percent were positive for H3N2 swine flu virus, and 0.93 percent, 1.6 percent, and 1.8 percent were positive, respectively, for the H3, H4, and H6 subtypes of avian influenza A virus. However, no serum samples collected in 2001 were positive for any of these viruses, indicating that transmission into swine was recent.

Given the recent transmission of avian influenzas into swine, "We recommend strongly that the pork industry worldwide should monitor the prevalence of influenza in pigs, considering their important role in transmitting this virus to humans," says Zhang.

Previously, novel reassortant H2N3 influenza viruses were isolated from US pigs, which "were infectious and highly transmissible in swine and ferrets without prior adaptation," according to a 2009 paper in the *Journal of Molecular and Genetic Medicine* by Wenjun Ma et al. Those viruses resembled, but were not identical to the H2N2 human pandemic virus of 1957.

A copy of the manuscript can be found online at <http://bit.ly/asmtip1212d>.

International, Poultry (OIE [edited], December 21): Low pathogenic avian influenza H5; Germany Outbreak 1 (12-614-00002): Tangstedt, Stormarn, SCHLESWIG-HOLSTEIN
Date of start of the outbreak: 18/12/2012; Outbreak status: Continuing; Epidemiological unit: Farm
Species: Birds; Susceptible: 1522; Deaths: 0; Destroyed: 1522

International, Poultry (OIE [edited], December 24): Highly pathogenic avian influenza H5N1; Nepal Outbreak 1: Dharke, Naubise VDC 1, Dhading, BAGMATI
Date of start of the outbreak: 13/12/2012; Outbreak status: Continuing; Epidemiological unit: Farm
Species: Birds; Susceptible: 3000; Cases: 2850; Deaths: 2850; Destroyed: 150
Affected population: A commercial farm with 42-day-old broiler chicken reared in a closed farm premises.

Michigan Wild Bird Surveillance (USDA, as of December 27): For the 2012 season (April 1, 2012-March 31, 2013), highly pathogenic avian influenza H5N1 has not been recovered from the 68 samples tested nationwide. For more information, visit <http://www.nwhc.usgs.gov/ai/>. To learn about avian influenza surveillance in wild birds or to report dead waterfowl, go to the Emerging Disease website at <http://www.michigan.gov/emergingdiseases>.

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

Contributors

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Table. H5N1 Influenza in Humans – As of December 17, 2012. http://www.who.int/influenza/human_animal_interface/EN_GIP_20121217CumulativeNumberH5N1cases.pdf. Downloaded 12/17/2012. Cumulative lab-confirmed cases reported to WHO. Total cases include deaths.

Country	2003-2005		2006		2007		2008		2009		2010		2011		2012		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Azerbaijan	0	0	8	5	0	0	0	0	0	0	0	0	0	0	0	0	8	5
Bangladesh	0	0	0	0	0	0	1	0	0	0	0	0	2	0	3	0	6	0
Cambodia	4	4	2	2	1	1	1	0	1	0	1	1	8	8	3	3	21	19
China	9	6	13	8	5	3	4	4	7	4	2	1	1	1	2	1	43	28
Djibouti	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Egypt	0	0	18	10	25	9	8	4	39	4	29	13	39	15	11	5	169	60
Indonesia	20	13	55	45	42	37	24	20	21	19	9	7	12	10	9	9	192	160
Iraq	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	3	2
Lao PDR	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2	2
Myanmar	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Nigeria	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
Pakistan	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	3	1
Thailand	22	14	3	3	0	0	0	0	0	0	0	0	0	0	0	0	25	17
Turkey	0	0	12	4	0	0	0	0	0	0	0	0	0	0	0	0	12	4
Vietnam	93	42	0	0	8	5	6	5	5	5	7	2	0	0	4	2	123	61
Total	148	79	115	79	88	59	44	33	73	32	48	24	62	34	32	20	610	360