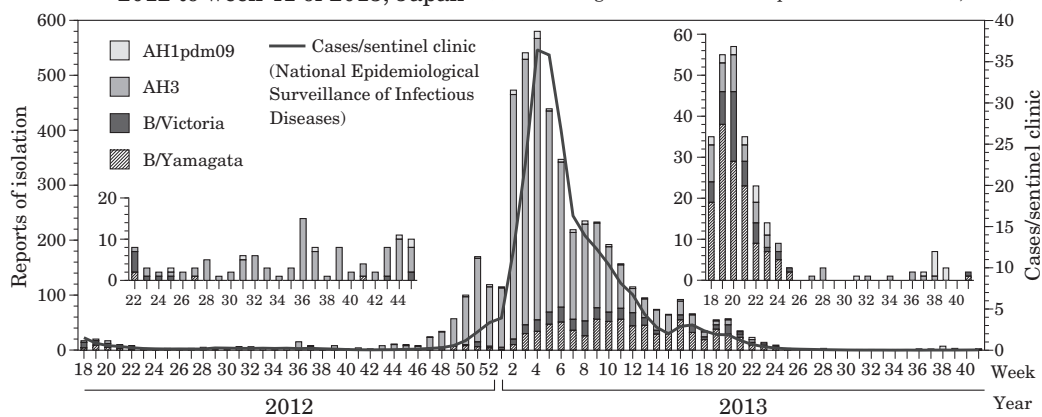


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<THE TOPIC OF THIS MONTH> 2012/13 influenza season, Japan

Figure 1. Weekly cases of influenza and isolation of influenza viruses from week 18 of 2012 to week 41 of 2013, Japan (Infectious Agents Surveillance Report: As of October 22, 2013)



The 2012/13 season's influenza epidemic in Japan (from week 36/September of 2012 to week 35/August of 2013) was caused mainly by subtype AH3, and to a lesser extent by type B and to a very limited extent by A(H1N1)pdm09 (AH1pdm09). The peak season was January as in the previous years.

Incidence of Influenza: Under the National Epidemiological Surveillance of Infectious Diseases (NESID), 5,000 influenza sentinels (3,000 pediatric and 2,000 internal medicine clinics) report diagnosed influenza cases weekly (<http://www.nih.go.jp/niid/images/iasr/34/405/de4051.pdf>). The number of patients/week/sentinel (<http://www.nih.go.jp/niid/en/10/2096-weeklygraph/2572-trend-week-e.html>) exceeded 1.0, an index of influenza epidemic, in week 50 of 2012, and peaked in week 4 of the new year as usual (average 36.4 patients/week/sentinel in contrast to 42.6 in 2011/12 season). The epidemic continued for 24 weeks until week 21 of 2013 (Fig. 1).

At the prefecture level, influenza incidence >10.0 patients/week/sentinel was first reported from Gunma Prefecture in week 51 of 2012, then from 20 prefectures in week 2 and from 47 prefectures in week 3 of 2013 (<https://nesid3g.mhlw.go.jp/Hasseidoko/Levelmap/flu/index.html>). The Okinawa's summer influenza epidemic annually observed since 2005 was smaller than previous years.

Based on number of reports from influenza sentinels, total number of influenza patients who visited medical institutions from week 36 of 2012 to week 21 of 2013 (September 3, 2012-May 26, 2013) was about 13,700,000. According to the hospitalization surveillance aiming at monitoring of severe influenza cases, which started in September 2011, there were 10,370 admissions including 1,552 patients in serious states requiring head computed tomography, electroencephalography, MRI scan, ventilator, and treatment in ICU.

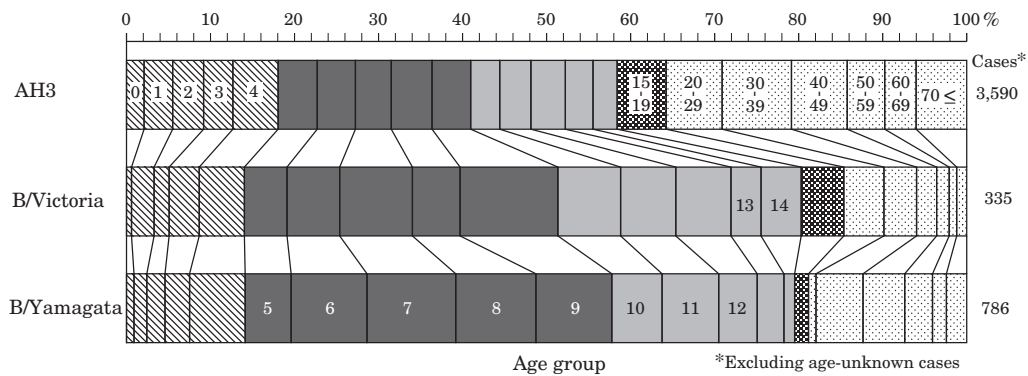
Isolation/detection of influenza virus: Total 4,910 influenza virus strains were isolated by the prefectural and municipal public health institutes (PHIs) in 2012/13 season (as of October 17, 2013, Table 1 in p. 327 of this issue), and 1,673 strains were detected by PCR alone. Among the total 6,583 isolated/PCR-detected viruses, 5,462 were derived from influenza sentinels and 1,121 from elsewhere (Table 2 in p. 327 of this issue).

Influenza viruses isolated/detected in 2012/13 season consisted of types AH3 (76%), type B (21%) and AH1pdm09 (2%). No former seasonal AH1 subtype virus has been detected since week 36 of 2009. Type B isolates were mostly of Yamagata and Victoria lineages with an isolation ratio of 7:3. Viruses Isolated/detected from overseas travelers included subtype AH3 (33 cases), AH1pdm09 (21 cases) and type B (9 cases) (Table 2). The 2012/13 influenza season started with subtype AH3, which remained predominant till week 12 of 2013, when AH3 was replaced by type B (Fig. 1; Fig. 2 in p. 327).

The highest influenza patient frequency was found among 5-9 year olds for all the influenza types/subtypes, particularly in type B cases (Fig. 3).

(THE TOPIC OF THIS MONTH-Continued)

Figure 3. Age distribution of cases with isolation of influenza virus AH3, B/Victoria and B/Yamagata in 2012/13 season, Japan (Infectious Agents Surveillance Report: As of October 22, 2013)



Antigenic characteristics of 2012/13 isolates and their drug resistance (see p. 328 of this issue): Ninety percent of the 94 AH1pdm09 isolates from Japan and abroad tested in National Institute of Infectious Diseases, were similar to A/California/7/2009 (2009/10-2012/13 vaccine strain) in the antigenicity. The remaining 10% were variants with reduced reactivity (≥ 8 -fold lower in HI titer) to the A/California/7/2009 antiserum. Ninety-nine percent of 236 AH3 isolates (most isolated in Japan and a very few in abroad) similar to A/Victoria/361/2011 (2012/13 vaccine strain). Among type B isolates, 96% of 120 Yamagata lineage isolates similar to B/Wisconsin/1/2010 (2012/13 vaccine strain) in antigenicity, while 99% of 95 Victoria lineage isolates had antigenically similar to that of B/Brisbane/60/2008 (2009/10-2011/12 season vaccine strain).

The oseltamivir resistance-related mutation, H275Y, was observed in 2 out of 103 AH1pdm09 Japanese isolates (1.9%), which was not found in the 2011/12 season. Twenty subtype AH3 isolates tested were all sensitive to oseltamivir, zanamivir, peramivir, and laninamivir.

Immunological status of Japanese population (See p. 334 of this issue): According to the data of the National Epidemiological Surveillance of Vaccine-Preventable Diseases obtained with serum samples ($n=6,794$) collected from July to September in 2012 in various parts of Japan, frequency of anti-A/California/7/2009 HI antibody positives (titer higher than 1:40) was 51%; and the positive frequency was the highest (60-80%) among age groups of 5-24 years. To subtype AH3, percentages of antibody positives were 30-40% except 50% level in the age groups of 5-24 years. The frequency of anti-type B Victoria positives, though above 40% in most age groups, was higher among 35-39 years differently from the case of anti-type A positives. To type B Yamagata, 31% were antibody positive (65% among 20-24 years; <20% among people younger than 10 years or older than 55 years).

Vaccines for 2012/13 and 2013/14 seasons: The quantity of trivalent vaccines produced in 2012/13 season was 32,620,000 vials (by a calculation of 1ml/vial), of which 25,210,000 vials have been used for vaccination.

Vaccine strains selected for 2013/14 season were A/California/7/2009 (X-179A) (H1N1)pdm09 for AH1, A/Texas/50/2012 (X-223) (H3N2) for AH3 and B/Massachusetts/2/2012 (BX-51B) (Yamagata lineage) for type B (see pp. 336 and 339 of this issue).

Avian influenza A(H7N9): Since the first report in February 19, 2013 total 136 laboratory confirmed cases including 45 deaths have been reported from the mainland China and Taiwan (as of October 16, 2013). The most recent report was the report from Zhejiang province in October after long silence since July (see p. 342 of this issue).

A(H7N9) was categorized as "designated infectious disease" under the Infectious Diseases Control Law on April 26, 2013. Manual for detection of A(H7N9) influenza virus is now widely available, and 74 PHIs and 16 quarantine stations in Japan constituting the national laboratory diagnosis network have already received the test reagents, PCR primer and probe set, and positive controls.

Avian influenza A(H5N1): In 2013, as of October 8, Bangladesh, Cambodia, China, Egypt, Indonesia, and Vietnam have reported total 31 A(H5N1) cases including 20 deaths (20 cases including 11 deaths from Cambodia) (http://www.who.int/entity/influenza/human_animal_interface/EN_GIP_20131008CumulativeNumberH5N1cases.pdf).

Act on Special Measures for Pandemic Influenza and New Infectious Diseases Preparedness and Response: For protecting life and health of the nation while minimizing adverse effects on daily life and economy that could be incurred by highly virulent new strains of influenza and other dangerous infections, "Act on Special Measures for Pandemic Influenza and New Infectious Diseases Preparedness and Response" was issued on May 11 of 2012 and enforced on April 13, 2013 (<http://www.cas.go.jp/jp/influenza/120511houritu.html>); in addition, the government's action plan was adopted in June 2013.

Additional comments: To implement prompt and adequate measures in case of outbreaks, sentinel surveillance, school outbreak surveillance, and hospitalization surveillance should be continued and further strengthened. The virus isolation should be conducted throughout the year to monitor antigenic and genetic changes of viruses so as to secure vaccine candidate strains and to check possible occurrence of resistance to anti-influenza drugs. The antibody positive rates against influenza viruses should be monitored nationwide.

Flash reports on the isolation and detection of influenza viruses in 2013/14 season are found in pp. 343 and 345 of this issue and <http://www.nih.go.jp/niid/en/iasr-inf-e.html>.

The statistics in this report are based on 1) the data concerning patients and laboratory findings obtained by the National Epidemiological Surveillance of Infectious Diseases undertaken in compliance with the Law Concerning the Prevention of Infectious Diseases and Medical Care for Patients of Infections, and 2) other data covering various aspects of infectious diseases. The prefectural and municipal health centers and public health institutes (PHIs), the Department of Food Safety, the Ministry of Health, Labour and Welfare, and quarantine stations, have provided the above data.

(特集つづき) (THE TOPIC OF THIS MONTH-Continued)

表1. インフルエンザウイルス分離報告数, 2009/10~2012/13シーズン
Table 1. Isolation of influenza viruses during 2009/10-2012/13 seasons

型 Type	2009/10	2010/11	2011/12	2012/13
A H1pdm09	12,126 (10,004)	3,819 (2,438)	11 (4)	108 (47)
A H1	-	-	-	-
A H3	113 (44)	2,339 (1,523)	3,709 (1,434)	3,612 (1,386)
A NT	- (12)	- (2)	- (14)	- (15)
B/Victoria	161 (2)	1,450 (3)	1,088 (14)	347 (19)
B/Yamagata	12	33	547 (8)	792 (27)
B NT	2 (17)	49 (313)	82 (304)	51 (179)
C	34 (18)	- (12)	25 (36)	-
合計 Total	12,448 (10,097)	7,690 (4,291)	5,462 (1,814)	4,910 (1,673)

A NT: A亜型未同定, B NT: B系統未同定

A NT: A not subtyped, B NT: B lineage not determined

各シーズン9月~翌年8月に採取された検体から各都道府県市の地方衛生研究所で分離されたウイルス報告数, -: 報告なし, ()内はウイルスは分離されていないが, 遺伝子検出または抗原検出で検出された数を別掲

(病原微生物検出情報: 2013年10月17日現在報告数)

Isolates from specimens collected during September through August next year

(): Gene or antigen detection, not included in the total (Infectious Agents

Surveillance Report: As of October 17, 2013 from prefectural and municipal public health institutes)

表2. インフルエンザウイルス分離・検出報告数, 2012/13シーズン
Table 2. Isolation/detection of influenza viruses during 2012/13 season

型 Type	Total (A+B)	(A)	(B)	(C)
A H1pdm09	155	119	36	21
A H1	-	-	-	-
A H3	4,998	4,133	865	33
A NT	15	12	3	-
B/Victoria	366	304	62	-
B/Yamagata	819	694	125	7
B NT	230	200	30	2
C	-	-	-	-
合計 Total	6,583	5,462	1,121	63

(A) インフルエンザ定点 Reports from sentinel surveillance

(B) インフルエンザ定点以外 Other reports

(C) 海外渡航歴有り(再掲) With history of travel abroad (secondary mention)

A NT: A亜型未同定, B NT: B系統未同定

A NT: A not subtyped, B NT: B lineage not determined

2012年9月~2013年8月に採取された検体から各都道府県市の地方衛生研究所で分離・検出されたウイルス報告数

(病原微生物検出情報: 2013年10月17日現在報告数)

Isolation/detection from specimens collected during September 2012 through August 2013 (Infectious Agents Surveillance Report: As of October 17, 2013 from prefectural and municipal public health institutes)

図2. 都道府県別インフルエンザウイルス分離報告状況, 2012/13シーズン
(病原微生物検出情報: 2013年10月15日現在報告数)
Figure 2. Isolation of influenza viruses by prefecture in 2012/13 season
(Infectious Agents Surveillance Report: As of October 15, 2013)

