

Current major event

Baselines and thresholds for Influenza Surveillance

WHO, in collaboration with the Ministry of Health in UAE, conducted a regional training workshop on setting baselines and influenza thresholds using influenza surveillance data. The training was conducted from 7-10 August 2017, in Dubai, UAE which was participated by 28 participants from 15 countries of the WHO Eastern Mediterranean Region.

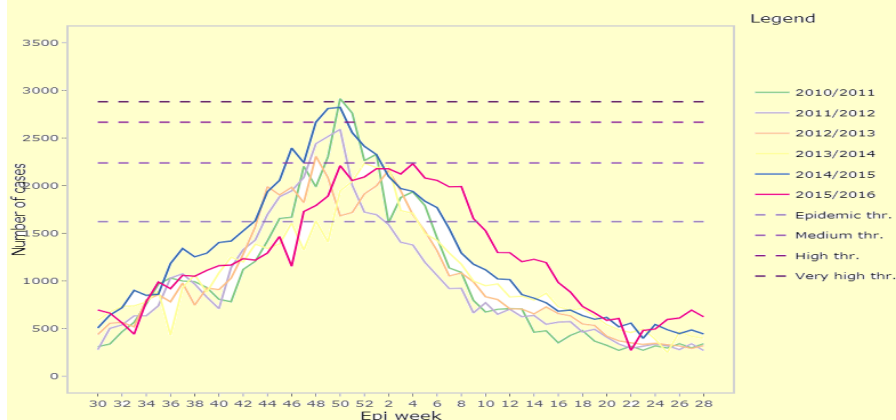
Editorial note

Influenza and other respiratory virus infections are the most common causes of primary care consultation and represent an important economic burden worldwide. In a typical season, annual attack rate of influenza can go up to 5–10% in adults and 20–30% in children although not all cases seek medical care and are captured by the surveillance systems. One of the major objectives of influenza surveillance is to monitor the timing, intensity and severity of the epidemics. On-going monitoring of influenza is needed to determine the onset and severity of seasons and to monitor changes in disease trends.

Various methods have been designed to establish thresholds for influenza activity. The methods vary in their complexity and can use either short-term or longer historical data to create time-varying or fixed thresholds. There is currently no gold standard or consensus for calculating thresholds. The simplest method uses visual inspection of historical data to create a fixed threshold used throughout the year. Other methods include regression models, time series methods, calculation of means and medians, Cumulative Sum (CuSum), and the Exponentially Weighted Moving Average.

One of the methods that is recommended by WHO is Moving Epidemic Method (MEM). The method uses several years of historical data on the median week of peak activity and assigns thresholds based on means and standard deviations of aligned data. In the first step,

Example showing influenza data analysis by the Moving Epidemic Method (MEM) for six consecutive influenza seasons in a country of WHO Eastern Mediterranean Region



Baseline and Thresholds definitions

Term	Definition
Baseline (Average epidemic curve)	It is the usual level of influenza activity that occurs during a typical year; it is the calculated average of several epidemic years. Its level will vary throughout the year.
Seasonal threshold	The level of influenza activity that signals the start and end of the annual influenza season/s.
Alert threshold	A level above which, varying by time of year, influenza activity is higher than most years.

step, for each season separately, the length of the epidemic period is estimated as the minimum number of consecutive weeks with the maximum accumulated percentage rates, splitting the season in three periods: a pre-epidemic, an epidemic, and a post-epidemic period. In the second step, MEM calculates the epidemic threshold as the upper limit of the 95% one-sided confidence interval of 30 highest pre-epidemic weekly rates. In the third step, medium, high, and very high intensity thresholds are estimated.

This particular workshop introduced the MEM to the workshop participations through iterative lectures and hands-on practical exercise using R statistical software. It is expected that this work shop will help the countries to determine their own influenza thresholds and cut-off points for detecting epidemics using influenza sentinel surveillance data, identify seasonality and seasonal surge and assess and monitor the severity of annual epidemics or outbreaks caused by novel virus or any other unusual events.

Update on outbreaks in the Eastern Mediterranean Region

MERS-CoV in Saudi Arabia; **Cholera** in Somalia; **Cholera** in Yemen; **Chikungunya** in Pakistan.

Current public health events of international concern [cumulative N° of cases (deaths), CFR %]

Avian Influenza: 2006-2017

Egypt (A/H5N1) [359 (122), 34%]
Egypt (A/H9N2) [3 (0)]

Chikungunya: 2016-2017

Pakistan [7,028 (0)]

MERS-CoV: 2012-2017

Saudi Arabia [1,693 (660), 39%]

Cholera: 2016-2017

Somalia [76,236 (1,157), 1.5%]
Yemen [503,484 (1,975), 0.4%]

Lassa Fever: 2017

Nigeria [681 (112), 16.4%]

Avian Influenza A (H7N9): 2013-2017

China [1,557 (605), 38.9%]

Dengue fever: 2017

Côte d'Ivoire [858 (2), 0.2%]

Wild poliovirus: 2014-2017

Pakistan [383 (0)]
Afghanistan [66 (0)]

Zika Virus Infection: 2015-2017

84 countries and territories have reported transmission so far.