Flu virus

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ABSTRACT

In February, 1980, the World Health Organization convened a meeting to consider information relevant to the nomenclature of influenza viruses and to make definitive proposals for the revision of the system which has been in use since 1971. The WHO recommendations are based on data derived from double reactions involving and neuraminidase antigens. (1) The revised system of nomenclature is similar to the 1971 system in that it consists of two parts: (a) a type and strain designation, and (b) for influenza A viruses, a description of the antigenic specificity (subtype) of the surface antigens (H and N). The strain designation for influenza virus types A, B, and C contains information on the antigenic type of the virus (based on the antigenic specificity of the nucleoprotein), the host of origin (for strains isolated from non-human sources), geographical origin, strain number, and year of isolation. For influenza A viruses, the antigenic description, in parentheses, follows the strain designation and comprises two indices describing the antigenic subtype of the haemagglutinin and of the neuraminidase antigens. For the influenza A viruses from all species, the H antigens are grouped into 12 subtypes, H1-H12, while the N antigens were divided into 9 subtypes, N1-9. Reference strains of influenza viruses are maintained by the WHO Collaborating Centres for Reference and Research on Influenza and the WHO Centres for the Study of Influenza Ecology in Animals and are made available upon request.

Keywords: Haemagglutinin, Neuraminidase, nomenclature, immunodiffusion.

INTRODUCTION

Here are some key points about flu. More detail and supporting information is in the main article (WHO, 1979).

Antibiotics cannot be used to treat flu and approximately 5 to 20% of Americans develop flu. Experts agree that the best way to prevent flu is to get vaccinated every year. The flu vaccine is not suitable for certain groups of people, such as those who have a severe allergy to chicken eggs.

FLU SYMPTOMS

Confusing flu with a bad cold is common. Flu and cold symptoms may both include a runny/blocked nose, sore throat and cough. To help separate them apart, below are some symptoms of flu that are different from a heavy cold were highlighted:

- High temperature;
- Cold sweats and shivers;
- Headache;
- Aching joints and limbs;
- Fatigue and feeling exhausted.

There may also be gastro-intestinal symptoms, such as nausea, vomiting and diarrhea; these are much more common among children than adults.

Normally, symptoms linger for about a week. However, the feeling of tiredness and gloom can continue for several weeks.

It is worth noting that not every person with flu will
have all of the symptoms; for instance, it is possible to have flu without fever.

**EARLY SYMPTOMS OF FLU**

Often, fatigue is one of the earliest signs of flu and cold. With flu, the fatigue is often more extreme. Other early symptoms can include cough, sore throat, fever, body ache, chills and gastro-intestinal changes.

**TREATMENTS FOR FLU**

As flu is caused by a virus, antibiotics cannot help, unless the flu has led to another illness caused by bacteria. Antivirals, such as oseltamivir (Tamiflu) and zanamivir (Relenza), may be prescribed in some circumstances. Painkillers can also alleviate some of the symptoms, such as headache and body pains (WHO, 1979). Some painkillers, such as aspirin, should not be given to children under 12 years of age. Individuals with flu should:

- Stay at home;
- Avoid contact with other people where possible;
- Keep warm and rest;
- Consume plenty of liquids;
- Avoid alcohol;
- Stop smoking;
- Eat if possible.

**FLU VIRUS**

WHO (1979) published a memorandum and described the conclusions of a group convened to reconsider the system of nomenclature for influenza viruses decided upon in 1971. The group reviewed the extensive information that had accumulated in the eight years since the system was introduced on the immunology, biology, biochemistry, genetics, epidemiology and ecology of influenza viruses. The participants felt that the 1971 system of nomenclature had provided a valuable framework for the antigenic description of influenza viruses, but that recent immunological and biochemical findings indicated a need to reconsider the subtype designation of the haemagglutinin (H) and neuraminidase (N) antigens of some influenza A viruses. The group proposed that several subtypes be merged and that designations indicating the species of origin of the antigen be omitted. The 1979 Memorandum also encouraged laboratory studies on antigenic relationships and invited comments on the proposed changes.

In February, 1980, the World Health Organization convened a meeting to consider further information and to make definitive proposals for influenza virus nomenclature. The present Memorandum describes the conclusions and recommendations that rose up from this meeting (World Health Organization, 1971).

The proposed revision of nomenclature described herein meets the requirement for a simple system that can be used by all countries and it is proposed that it should be used from the date of publication of this memorandum. It is based on data derived from double immunodiffusion (DID) reactions involving H and N antigens. The DID test, when performed using hyperimmune sera specific to one or other of the antigens provides a valuable method for comparing antigenic relationships. Similarities between antigens are detected as lines of common precipitin, whereas the existence of variation between antigens is revealed by spurts of precipitin when different antigens are permitted to diffuse radially inwards toward a single serum. Based on the results of DID tests on influenza A viruses from all species, the H antigens can be grouped into 12 subtypes, while the N antigens can be divided into 9 subtypes as indicated.

**THE NOMENCLATURE SYSTEM**

The revised system of nomenclature is similar to the 1971 system in that it consists of two parts: (a) a type and strain designation; and (b) for influenza A viruses, a description of the antigenic specificity of the surface antigens (World Health Organization, 1971). The strain designation for influenza virus types A, B, and C contains the following information:

1) A description of the antigenic type of the virus based on the antigenic specificity of the NP antigen. Since 1971, a further type-specific internal antigen of the influenza A and B viruses, the matrix (M) protein, has been described. Typing of influenza A and B viruses based on the M protein is consistent with the results obtained with NP antigen (Schild, 1980).

2) The host of origin. This is not indicated for strains isolated from human sources but is indicated for all strains isolated from non-human hosts, for example, swine, horse (equine), chicken and turkey (Schulman and Kilbourne, 1965). For viruses from non-human species, both the Latin binomial nomenclature and the common name of the host of origin should be recorded in the original publication describing the virus isolate, for example, *Anas acuta* (pintail duck). Thereafter, the common name of the species should be used for the strain, for example, A/duck/USSR/695/76 (H<sub>2</sub>N<sub>3</sub>). When viruses are isolated from non-living material the nature of the material should be specified, for example, A/lake water/Wisconsin/i/79.

3) Geographical origin;
4) Strain number;
5) Year of isolation.

For influenza A viruses, the antigenic description, in parentheses, follows the strain designation and includes
the following information (Schild, 1980).

PERSON FLU TO PERSON

People with flu can spread it to others up to about 6 feet away. Most experts think that flu viruses are spread mainly by droplets made when people with flu cough, sneeze or talk. These droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs. Less often, a person might also get flu by touching a surface or object that has flu virus on it and then touching their own mouth or nose.

To avoid this, people should stay away from sick people and stay home if sick. It is also important to wash hands often with soap and water (Schulman and Kilbourne, 1965). If soap and water are not available, use an alcohol-based hand rub. Linens, eating utensils and dishes belonging to those who are sick should not be shared without first washing thoroughly. Eating utensils can be washed either in a dishwasher or by hand with water and soap and do not need to be cleaned separately. Further, frequently touched surfaces should be cleaned and disinfected at home, work and school, especially if someone is ill (Schulman and Kilbourne, 1965).

CONCLUSIONS

Reference strains of influenza viruses are maintained by the WHO Collaborating Centres for Reference and Research on Influenza and the WHO Centres for the Study of Influenza Ecology in Animals and are made available upon request. Reference strains are viruses that have noteworthy properties and include one or more examples of each new variant within a subtype that exhibits antigenic drift from the prototype and which is responsible for epidemiologically significant outbreaks of disease or epidemics. Other examples of reference strains are viruses that possess new combinations of H and N subtypes; viruses that have unusual biological properties; and viruses that have been the subject of extensive investigations reported in the scientific literature (Russel and Liew, 1979).

REFERENCES


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