

Department of Health

# Public Health & Epidemiology Bulletin

Volume 7 Number 1

Homepage : <http://www.info.gov.hk/dh/>

Feb 1998

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## AN UPDATE OF INFLUENZA A (H5N1) IN HONG KONG

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Up to mid January 1998, there were eighteen confirmed cases of influenza A (H5N1) in Hong Kong. The onset of symptoms of the first case was in May 1997, while four cases had their onset in November and the remaining thirteen were in December 1997. The latest onset date of illness was 28 December 1997.

The age of the cases ranged from one to 60. Nine of them were young children under the age of 12. The male to female ratio was 8:10. Eight cases were pre-schoolers, four were students, one was an office worker, two were domestic helpers, two were housewives and one had retired.

### *Clinical Presentations*

The initial presentations were similar to typical influenza with fever, sore throat and cough. Conjunctivitis was seen in some patients. From the study of recent cases, it appeared that persistent high fever ( $\geq 39^{\circ}\text{C}$ ) was another sign that could alert the health care worker of the possibility of influenza A (H5N1) infection. Furthermore, the virus caused a rapid downhill clinical course in eight out of the 18 cases, ending with viral pneumonia and respiratory distress syndrome. Six of these patients died.

### *Mode of Transmission*

The mode of transmission was being extensively investigated. Preliminary investigation results were summarised as follows:

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1. *Genetic sequencing of the virus*  
DNA sequencing of virus isolates has been performed on the first seven cases. All showed completely avian gene sequences, indicating that reassortment with human influenza virus genes had not occurred.

2. *Serological findings*  
A total of 921 serum samples collected from an exposed group (N=502) and a non-exposed group (N=419) in relation to the first influenza A (H5N1) case were tested using a new micro-neutralisation assay developed by the Centers for Disease Control and Prevention, Atlanta, USA. Nine samples from the exposed group were positive for influenza A (H5N1) antibody, while the samples from the non-exposed group were all negative (Table 1). The preliminary results showed that poultry workers were more likely to test positive for the antibody.

3. *Temporal relation*  
There were reports of outbreaks of influenza A (H5N1) amongst chicken in Hong Kong during March/April and also in October/November 1997. These were followed by the occurrence of human cases on both occasions.

4. *Exposure to poultry*  
Seven of the 18 cases gave a possible history of exposure to poultry. It was difficult to obtain history in some of the remaining cases who were young children or deceased. A case-control study was conducted to determine the risk of exposure.

Collectively, the studies conducted so far indicated that the main mode of transmission of influenza A (H5N1) was from bird to human. The possibility of man-to-man transmission remained open; but even if it occurred, the efficiency of transmission at this time was low.

**Control Measures**

On 16 December 1997, the Inter-departmental Co-ordinating Committee on Influenza A (H5N1) was set up to co-ordinate efforts of the various government departments on the control of the disease. Measures taken included:

*Disease surveillance*

1. Extending the influenza surveillance programme to 63 general out-patient clinics and 18 sentinel private general practitioners and enhancing surveillance for hospital in-patients.

**Table 1 Serological Findings of 921 Serum Samples Collected from the First Case of Influenza A (H5N1) in May 1997**

Exposed group (N=502)	Non-exposed group (N=419)
Potential contacts for the patient Family members: 0 out of 4 was positive Health care workers: 1 out of 54 was positive (1.9%) Staff, students and their parents: 1 out of 261 was positive (0.4%) Neighbours: 1 out of 63 was positive (1.6%)	0 out of 419 was positive blood donors hepatitis B vaccination cohort
Laboratory workers who handled the virus 1 out of 73 was positive (1.4%)	
People exposed to animals poultry workers: 5 out of 29 were positive (17.2%) pig farm workers and neighbours: 0 out of 18 was positive	

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2. Conducting case investigations and epidemiological studies in collaboration with the Centers of Disease Control and Prevention at Atlanta, USA.
  3. Increasing the capacity of the Government Virus Unit in subtyping influenza viruses and lending support to private laboratories.
  4. Performing a health screening exercise for poultry workers.
  5. Stepping up surveillance in local chicken and introducing a system to report unusual chicken deaths in wholesale and retail markets.

#### *Poultry control*

1. Suspending chicken import from mainland temporarily since 24 December 1997.
2. Slaughtering all chicken in local chicken farms and all poultry at wholesale markets and retail outlets in Hong Kong during 29-31 December 1997.
3. Introducing a system to ensure the health status of chicken entering Hong Kong, including certification,

quarantine, border checks and labelling for recall.

#### *Hygiene*

1. Cleansing all poultry stalls at wholesale and retail outlets.

#### *Publicity*

1. Producing guidelines / information sheets for health care professionals, poultry workers, schools, child care centres and tourists.
2. Setting up hotlines (2833 0111, 2833 0112) for public enquiry.
3. Organising an open forum for doctors on influenza A (H5N1).
4. Disseminating information through the internet, TV / radio programs, newspaper columns, exhibitions and talks.

For more updated information on influenza A (H5N1), please refer to the homepage of Department of Health at <<http://www.info.gov.hk/dh/>>.

19 January 1998

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## **DENTAL CARIES AMONG HONG KONG PRIMARY SCHOOL CHILDREN**

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### ***The Disease***

Dental caries (tooth decay) is a disease of teeth where the affected tooth is structurally broken down. It is caused by bacteria in dental plaque which metabolise sugar available and produce acid that attack the tooth surface. Continual destruction of the

affected tooth may lead to pulp damage causing toothache, subsequent abscess formation and ultimately tooth loss. In this article, dental caries level among primary school children over the past three and a half decades will be reviewed and the findings of the Oral Health Survey conducted in 1995 will also be presented.

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## The DMF Index

The **DMF index** is widely adopted in addition to prevalence to describe the severity of dental caries. The DMF index may be presented with tooth as unit known as **DMFT**. The upper case letters are used to denote the permanent dentition (DMFT) and the lower case letters are used to denote the primary dentition (**dmft**). The DMF value is the sum of three components. The **D** component of the index indicates the number of unit with active decay, the **M** component indicates the number of unit extracted and missing due to caries, and the **F** component indicates the number of unit with sound and non-temporary filling. Thus, the **DMFT** value for an individual indicates the total number of teeth with caries experience in that individual. The **DMFT** value for a population group is calculated by the total number of teeth with caries experience in the group divided by the number of individuals in the group.

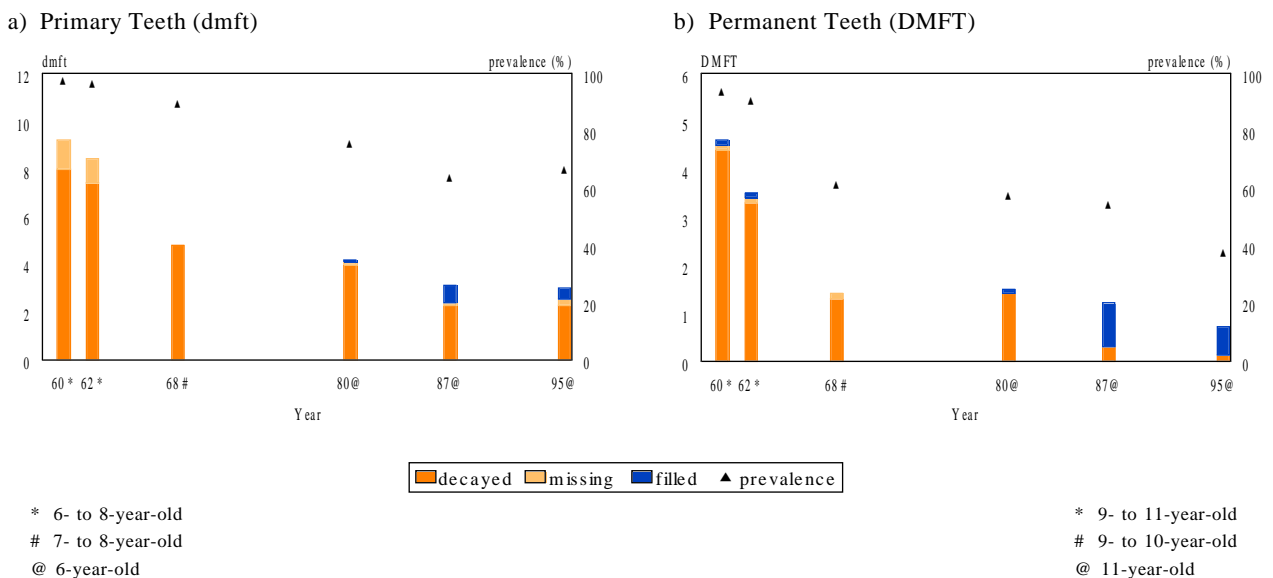
## Epidemiology of Dental Caries in Primary School Children Between 1960-1990

The changes in dental caries level among primary school age children in Hong Kong are shown in Figure 1. It can be observed that the prevalence of caries dropped from 97% (among 6- to 8-year-old children) in 1960 to 63% (among 6-year-old) in 1987 in the primary dentition and from 93% (among 9- to 11-year-old) in 1960 to 54% (among 11-year-old) in 1987 in the permanent dentition. The mean dmft and DMFT values also decreased from 9.2 (among 6- to 8-year-old) and 4.1 (among 9- to 11-year-old) respectively in 1960 to 2.9 (among 6-year-old) and 1.2 (among 11-year-old) in 1987.

## The 1995 Oral Health Survey

To update the oral health situation of primary school students, a survey was conducted by the Department of Health in 1995. One of

**Figure 1 Mean Number of Decayed, Missing and Filled Teeth in Primary School Children in Hong Kong**



For 6-year-old children, the primary dentition has been established for a few years while the first permanent teeth are jointly erupting into the oral cavity. Thus, only the primary dentition was considered in this age group.

For 11-year-old children, all primary teeth should have been exfoliated. Hence, only the permanent dentition was considered in this age group.

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the objectives of this survey was to describe and monitor the prevalence and severity of dental caries in primary school children after the reduction of water fluoride concentration in 1988. The fluoride was reduced from 0.7 ppm to 0.5 ppm with the purpose to further reduce the level of dental fluorosis, an unsightly alteration of dental enamel due to excessive amount of fluoride intake during tooth formation period. Another objective was to analyse the effect of the SDCS on the caries level of its participants.

In this survey, a representative sample of 3 137 primary school children was selected by a two-stage sampling method. In the first stage of selection, 60 primary schools were selected. In the second stage, students in each chosen school were systematically selected. The investigation comprised clinical examination of the selected children and a questionnaire survey completed by their parents. Standard epidemiological techniques were adopted and the diagnostic criteria were based on those recommended by the World Health Organisation.

### ***Results of the Survey and Discussion***

The caries situation in 1995 is shown in Figure 1. The prevalence of dental caries in the primary dentition of 6-year-old children was found to be 66% and the mean dmft value was 3.0. The active decay component constituted 77% of the caries experience ( $dt = 2.3$ ) and the filled component and missing component constituted 17% ( $ft = 0.5$ ) and 6% ( $mt = 0.2$ ) respectively.

The prevalence of dental caries in the permanent dentition of 11-year-old children was found to be 37%. There was a 31% reduction in the prevalence of caries in permanent dentition in the same age group as compared with 1987. The mean DMFT value was 0.7 and this also represented a 42% reduction as compared with 1987. In

the permanent dentition, the major component of the caries experience was the filled component which constituted 86% ( $FT = 0.6$ ). The active decay component constituted 14% only ( $DT = 0.1$ ) and the missing component was negligible.

The caries experience in the primary dentition of 6-year-old children in Hong Kong seemed to have levelled off since mid-1980s. The mean dmft value of 3.0 was considered high when compared with most developed countries where their dmft values ranged from 1.3 in Netherlands to 2.0 in USA and Australia. The prevalence of 65% was also high compared with 50% in USA and 28% in Sweden.

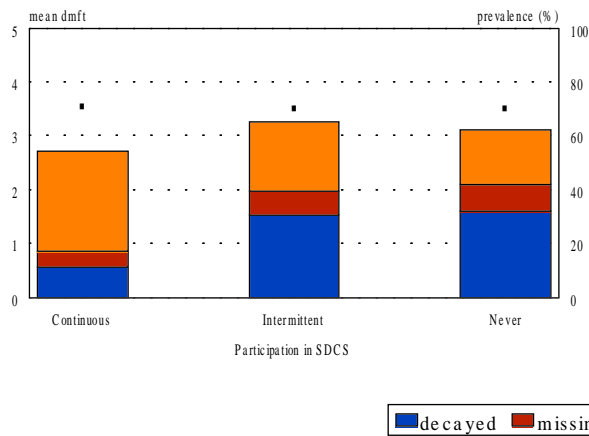
The declining trend in caries in the permanent dentition was also observed in other countries. The observed decline was mainly attributed to the widespread use of fluoride-containing products, especially toothpastes. Another factor which might have contributed to the decline in caries in the permanent dentition was the School Dental Care Service.

The first School Dental Clinic was established in 1981. It had been reported in 1987 that the SDCS was only effective in converting the decay component into filled component. The caries experience of participants to the SDCS was found to be much the same as that of non-participants.

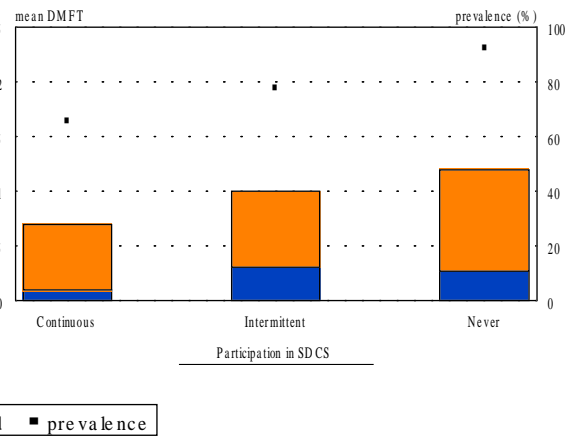
Among all children in the sample, 84% had joined the SDCS in that particular school year (1994-95). For primary (P)1 children, they might not have been scheduled to attend the SDCS at the time of survey and P2 might have had only attended once. It was considered that the effect of the SDCS could not have been apparent with one visit only, or even none. Thus, to evaluate the effect of the SDCS, P1 and P2 students were excluded from the data analysis. Among the P3 to P6 students, 75% were *continuous* participants

**Figure 2 Dental Caries in the Dentition in Different Groups of SDCS Participants**

a) Primary Dentition of P3 Students



b) Permanent Dentition of P6 Students



Continuous participation : Students joined SDCS in every eligible school year.  
 Intermittent participation : Students did not join SDCS in some eligible school year(s).  
 Never : Students never joined SDCS.

of the SDCS, 20% were *intermittent* participants, and 5% were *non-SDCS* participants.

The level of dental caries in the primary dentition among P3 students with respect to different groups of SDCS participants was shown in Figure 2(a). There were no significant differences in both the mean dmft values and the prevalence, though the dmft value of the group of continuous participants seemed to be lower. As dental caries in the primary dentition might have been established when the children entered the primary schools, the SDCS could exert little effect on the overall dmft level. However, the group of continuous participants had a significantly higher level of filled component and lower level of decayed component ( $p < 0.01$  and  $p < 0.05$  respectively).

The level of dental caries in the permanent dentition among P6 students with respect to different groups of SDCS participants was

shown in Figure 2(b). This time there were significant differences in both the mean DMFT values and the prevalence ( $p < 0.01$ ), with the lowest mean DMFT value and lowest prevalence among the group of continuous participants. Continuous participants of the SDCS had benefitted not only from converting the decayed teeth into filled teeth, but also from the preventive approach adopted by the School Dental Care Service which included personalised oral hygiene instruction and application of fissure sealants.

### ***The Future***

It could be observed that the caries reduction effect of water fluoridation was still maintained even when the water fluoride concentration had been reduced from 0.7 ppm to 0.5 ppm. With the cost of HK\$2.30 per person per annum in 1995-96, water fluoridation remained a cost-effective public health programme and should be continued with its effects being regularly

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monitored. The preventive approach adopted by the School Dental Care Service was also shown to be effective in reducing dental caries in the permanent dentition among its continuous participants. To ensure maximum benefits for the participants, their continuous participation should be encouraged. With the recognition of the need to start prevention of caries development in the pre-school age or as young as possible, the Department of Health has launched a health education programme entitled "Brighter Smile for the Next Generation" in 1992. In parallel to all preventive efforts, the level of dental health should be monitored on a regular basis.

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## NEWS IN BRIEF

### *Advisory Committee on Immunisation*

In its recent meeting held on 16 October 1997, the Department of Health Advisory Committee on Immunisation (ACI) examined the issues of influenza and chickenpox vaccination. After examining the scientific evidence both locally and overseas, the ACI recommended that local elderly residents in residential homes should receive influenza vaccination on an annual basis to prevent influenza illness and its complications. The Committee also recommended that chickenpox be included again in the list of statutorily notifiable diseases for enhanced surveillance. However, the inclusion of chickenpox vaccine into the routine childhood immunisation schedule of Hong Kong was not recommended at this stage taking into consideration the issues of long term safety and cost-effectiveness.

### *Implementation of Influenza Vaccination Programme for Residents of Elderly Homes*

In accordance with the recommendation of the Advisory Committee on Immunization (ACI), the Department of Health launched an influenza vaccination programme to provide free vaccination to residents of elderly homes in February 1998.

The Department of Health considered it opportune to launch the programme at this time of year to take advantage of the public attention and increased awareness given to the recent reports of influenza A (H5N1) cases. The Department hoped this would result in greater acceptance of the influenza vaccination, a requisite for achieving high levels of immunity within the particular community. The vaccination programme was not aimed at protecting individuals from H5N1 influenza.

The programme was completed within February 1998. About 600 residential institutions caring for some 40 000 elderly persons were covered.

## NUMBER OF NOTIFICATIONS OF INFECTIOUS DISEASES

DISEASE	1996	1997
	Cases	Cases
1) Cholera	4	14
2) Plague	-	-
3) Yellow Fever	-	-
4) Acute Poliomyelitis	-	-
5) Amoebic Dysentery	8	12
6) Bacillary Dysentery	300	363
7) Dengue Fever	5	10
8) Diphtheria	-	-
9) Food Poisoning : <i>Outbreak</i>	314	364
<i>Persons Affected</i>	1 829	1 882
10) Legionnaires' Disease	2	2
11) Leprosy	8	11
12) Malaria	97	101
13) Measles	110	318
14) Meningococcal Infections	4	5
15) Mumps	48	52
16) Paratyphoid Fever	28	18
17) Rabies : <i>Human</i>	-	-
<i>Animal</i>	-	-
18) Relapsing Fever	-	-
19) Rubella	605	4 992
20) Scarlet Fever	52	78
21) Tetanus	16	8
22) Tuberculosis	6 501	7 072
23) Typhoid Fever	66	71
24) Typhus Fever	5	8
25) Viral Hepatitis :	477	737
- <i>A</i>	264	524
- <i>B</i>	144	90
- <i>Non-A Non-B</i>	58	19
- <i>Unclassified</i>	11	104
26) Whooping Cough	9	12

### AIDS/HIV Surveillance

Cumulative Number of Cases	as at 30.6.97	as at 30.9.97
AIDS	274	290
HIV	855	907