

National Influenza Experience in Hong Kong, 1968

W. K. CHANG¹

Although its origin is uncertain, the 1968 influenza epidemic in Hong Kong may have spread from the mainland of China. It began in Hong Kong on 13 July and reached its maximum intensity in 2 weeks, lasting some 6 weeks in all. About 15% of the population was affected, but the mortality rate was low and the clinical symptoms were mild. The causative strain was isolated on 17 July and, because of its antigenic deviation from 1967 A2 strains, was sent to the World Influenza Centre in London and the International Influenza Center for the Americas in Atlanta, Ga., It was then proved to be a distinct antigenic variant of A2 virus, and the World Health Organization warned of its possible world-wide spread on 16 August.

The rapid spread of influenza virus variants within and from Hong Kong is facilitated by the overcrowding of the population and by the constant communication both with the Chinese mainland and with the rest of the world. The population density is such that an epidemic can occur even in the hot subtropical summer.

Ever since our virus laboratory started functioning as a National Influenza Centre of the World Health Organization in 1963, we have been aware of the emergence of influenza virus mutants in this part of the world. Eleven years after the Asian influenza epidemic, a new virus variant was isolated in the summer of 1968 in Hong Kong. The origin of this variant is not known. There was no official information on an influenza epidemic from the health authorities of mainland China, but prior to the outbreak in Hong Kong, travellers reported an increased incidence of influenza-like infections in the neighbouring Chinese province. For various reasons, virus isolations were not carried out on arriving travellers to confirm these reports.

Hong Kong is one of the few places which communicates freely with the Chinese mainland. Cargo boats and trains daily bring in food supplies as well as passengers. Local residents are free to go to their native villages and return, provided they possess a re-entry permit. Hence, the place is vulnerable to the spread of influenza in the event of an epidemic in mainland China. On the other hand, Hong Kong, being a free port and a busy tourist centre, is also an effective place for virus exchange with other parts of the world by air and sea.

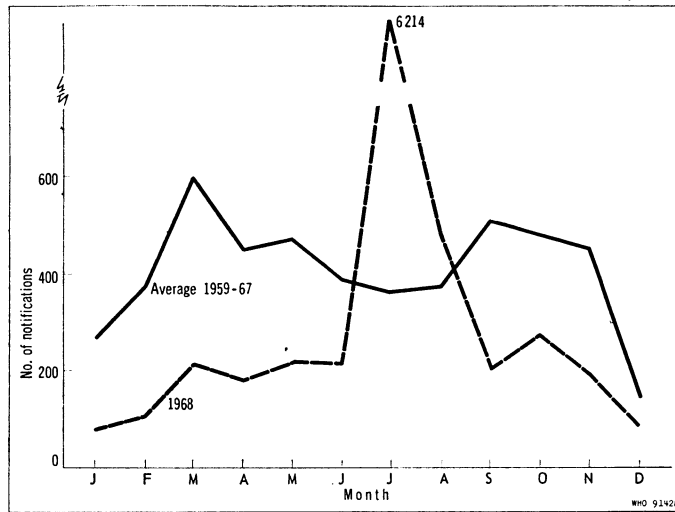
Overpopulation in Hong Kong facilitates rapid virus dissemination and renders an epidemic readily recognizable. Hong Kong has a population of 3.9 million and two-thirds of the population are concentrated in the urban districts on the southern part of the Kowloon Peninsula and along the northern coast of the Hong Kong Island. The total area of the urban districts is about 5 mi² (13 km²) in which 1 million people live in the Government resettlement estates with a provision of about 30 ft² (2.8 m²) for an adult. In urban areas, the population density is 500 persons per acre (123 500 persons per km²) on average. In these conditions of crowding, the seeding of a new virus variant is rapid and is almost immediately followed by an explosive outbreak. The mechanism of spread is undoubtedly by droplet from person to person and virus dissemination is most effective under all circumstances: in crowded public transports, in public places and places of work, in schools as well as at home. Most of the susceptible population is affected successively within a short period. The spread is not hindered by the hot weather of the subtropical summer and the epidemic sweeps rapidly through the population.

Influenza is not a notifiable disease in Hong Kong but voluntary notifications² on influenza-like dis-

¹Senior Medical Officer, Government Virus Unit, Queen Mary Hospital, Medical and Health Department, Hong Kong.

²Data on influenza notifications reported in this paper were obtained from the Statistical Unit, Medical and Health Department, Hong Kong.

FIG. 1
SEASONAL DISTRIBUTION OF INFLUENZA-LIKE DISEASES IN HONG KONG,
1959-67 AND 1968



eases are obtained from 9 of the government clinics. Whenever an increase of influenza infections is reported, the laboratory carries out virological confirmation. In the period between 1962 and 1967, influenza outbreaks were recorded mostly in winter and early spring and less frequently in autumn, as is shown in the table. The influenza virus isolated on each occasion belonged to either type A2 or type B,

which showed close antigenic relationship with the current virus strains.

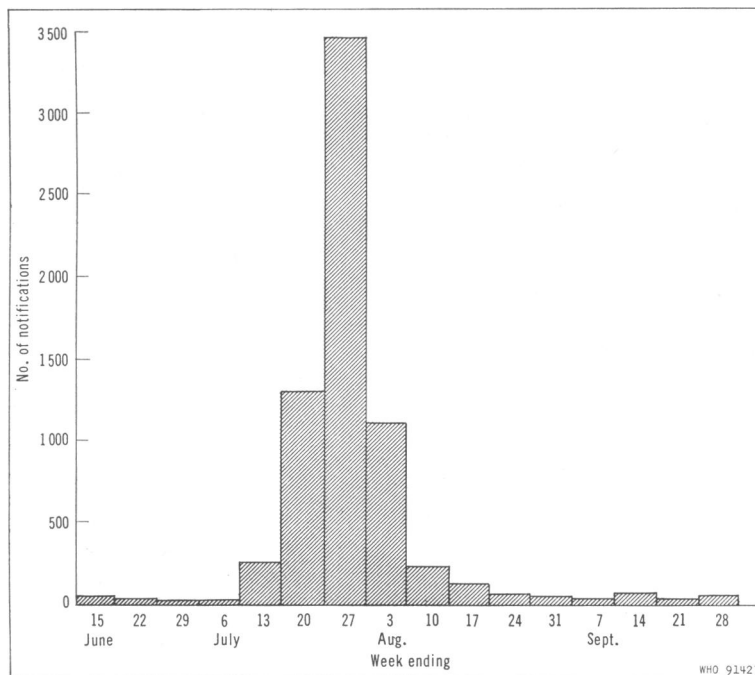
In contrast to the cold-season occurrence of influenza epidemics in Hong Kong, an epidemic broke out in mid-summer of 1968 (Fig. 1). It was first observed on 13 July, when there was a sudden increase of patients with influenza-like symptoms at the Government clinics. The epidemic soon reached

MONTHLY NOTIFICATIONS OF INFLUENZA-LIKE DISEASES AND INFLUENZA VIRUS ISOLATIONS (BOXED)
IN HONG KONG, 1962-68

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1962	210	333	1 427 ^a	746	585	474	663	761	297	354	340	184	6 374
1963	229	243	435	353	502	344	336	414	200	538	626 ^a	213	4 433
1964	232	128	263	232	239	322 ^b	408	179 ^b	119	119	113	119	2 473
1965	135	108 ^a	134 ^a	108 ^a	81	83	106	20	35	28	28	30	896
1966	25 ^a	368 ^{a, b}	497 ^{a, b}	44	27 ^b	44	111 ^b	27	19	16	25	17	1 220
1967	2	11	10	17	51	38	99	96 ^a	1 705 ^a	1 422	1 444	28	4 923
1968	84	110	220	182	225	216	6 214 ^a	478 ^a	196	283	179	106	8 693

^a Influenza A2 virus isolated.
^b Influenza B virus isolated.

FIG. 2
WEEKLY INCIDENCE OF INFLUENZA-LIKE DISEASES IN HONG KONG, JUNE TO SEPTEMBER 1968



its maximum intensity in the week of 27 July and gradually subsided in the following 3 weeks (Fig. 2). Altogether, the outbreak lasted for about 6 weeks. It was reported that the disease affected all age-groups and the clinical symptoms were considered mild, lasting for 3–5 days. There were no observable excess deaths during the epidemic.

The data for the 1968 epidemic in Hong Kong are far from complete, because the figures supplied by 9 of the Government clinics represented only a small proportion of the affected people. Many attended private clinics or sought relief from Chinese herbalists. No useful information could be derived from absenteeism data for factories and schools; the majority of the labour force are workers who are paid daily and who do not report sick unless they have severe symptoms, and the schools were closed for the summer vacation. However, it was suggested that about 15% of the population was affected in this epidemic.

On 17 July, the laboratory isolated the virus strain in primary monkey kidney tissue culture and made a

preliminary identification of subtype A2. Its haemagglutinating activity was inhibited to only a low titre of 1:80 by the polyvalent A2 antiserum. The antiserum, which was supplied by the National Communicable Disease Center in the USA, had a haemagglutination-inhibiting titre of 1:640 against the 1967 A2 strains. No dissimilarity of such magnitude had been observed in the previous A2 strains which were isolated between 1962 and 1967 in Hong Kong. Consequently, the virus strain was immediately dispatched to the World Influenza Centre in London in the form of infected tissue culture. In the following week, 5 more lyophilized strains were sent to the World Influenza Centre and also to the International Influenza Center for the Americas in Atlanta, Ga. The strain was later confirmed to be a distinct antigenic variant of A2 virus. Following a warning of its possible spread issued by the World Health Organization on 16 August, the virus was found to be causing epidemic outbreaks in other parts of the world in the later part of 1968.