New Viruses Observed in Children With Respiratory Diseases

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EVENTUAL control of the common respiratory diseases depends on the determination of their etiology. Despite recent notable advances in delineating the viral etiology of such illnesses—at least 70 newly recognized viral agents have been described since 1948—the causes of most remain to be found. The preliminary report outlined here presents data on two new respiratory viruses which have been found in children with respiratory illnesses and which, while biologically related to influenza and mumps, are also quite distinct.

Previously unrecognized myxoviruses classified in two serologic groups were isolated from children with respiratory illnesses during October and November 1957 (*1*). These two new groups of agents, provisionally called hemadsorption (HA) viruses types 1 and 2, were isolated in monkey kidney cultures with the use of the hemadsorption technique recently introduced by Vogel and Shelokov (*2, 3*). Preliminary clinical and epidemiological observations indicated that these agents might be responsible for a proportion of the common acute respiratory illnesses in children which remain largely unexplained despite recent advances exemplified by the discovery of adenoviruses (*4, 5*) and other new agents (*6–9*).

The type 1 HA virus was isolated from 35 children, 8 of whom were studied in Washington, D. C., hospitals and 27 of whom were involved in an outbreak of febrile respiratory illness in a nursery group of a District of Columbia welfare institution (Junior Village). When throat swabs were collected on one day from all infants in the affected nursery and tested for HA viruses, epidemiological analysis indicated that there was a significant association of type 1 HA virus isolations with febrile illnesses (chi-square test indicated $P=0.03$), thus strongly suggesting but not proving an etiological relationship. The illnesses were characterized by fever of 2 to 3 days' duration and cough. Nearly half of the cases had moist medium to fine rales; several had coarse breath sounds and rhonchi.

Type 2 HA virus was isolated from three infants with acute laryngotracheobronchitis (croup), and more experience will be required with this agent before its etiological importance in disease can be determined.

Acute and convalescent serum specimens from patients yielding either type 1 or type 2 virus showed substantial antibody rises in complement fixation and hemagglutination inhibition tests. Specimens from 82 hospitalized patients without respiratory illnesses did not yield the two viruses.

The contribution of the HA viruses to the total respiratory disease picture cannot be assessed at this time. However, serologic data suggest that the contribution of these agents to childhood respiratory illnesses may be substantial. Preliminary surveys for antibodies against HA viruses in the serums of 55 adults,

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nearly all young males, showed that all had neutralizing antibodies to type 1 virus, and 39 had neutralizing antibodies to type 2.

The following properties indicated that the HA viruses are members of the myxovirus family. Both types 1 and 2 HA viruses agglutinated guinea pig and chicken red cells: They propagated in the amniotic cavity of the embryonated hen's egg, they possessed erythrocyte receptors sensitive to RDE (receptor destroying enzyme of *Vibrio cholerae* filtrate), and they were sensitive to ether.

Studies of the serologic relationships of HA viruses to other myxoviruses, as determined by the use of specific animal serum, are reported elsewhere (*1*). The table shows distinct immunological differences from influenza A, B, and C, mumps, and croup associated (CA)

Relationship of types 1 and 2 hemadsorption (HA) virus to certain myxoviruses, as shown by representative complement fixation tests with human serums

Infection, patient, and serum	Reciprocal of CF antibody titer with 4 units of indicated antigen									
	HA type 1 MK antigen [1]	HA type 2 MK antigen [1]	Influenza A Asian CAM antigen [2]	Influenza B CAM antigen [2]	Influenza C chick embryo extract antigen [3]	Sendai		Mumps		CA MK antigen [1]
						CAM antigen	Allantoic fluid antigen	CAM antigen	Allantoic fluid antigen	
Type 1 HA										
Patient Ha:										
Acute	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8
Convalescent	64	<8	<8	<8	<8	<8	<8	<8	<8	<8
Patient Mo:										
Acute	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8
Convalescent	64	<8	<8	<8	<8	<8	<8	<8	<8	<8
Type 2 HA										
Patient Sc:										
Acute	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8
Convalescent	64	64	<8	<8	<8	<8	32	<8	<8	<8
Patient Se:										
Acute	16	<8	<8	<8	<8	<8	<8	<8	<8	<8
Convalescent	64	64	<8	<8	<8	<8	32	<8	<8	<8
Influenza A Asian										
Patient Su:										
Acute	16	<8	<8							
Convalescent	16	<8	32							
Patient Bu:										
Acute	16	<8	<8							
Convalescent	16	<8	<32							
Influenza B										
Patient Ba:										
Acute	8	8		<8						
Convalescent	<8	<8		64						
Patient St:										
Acute	32	16		<8						
Convalescent	32	8		64						
Influenza C										
Patient Tr:										
Acute	8	<8			<8					
Convalescent	8	<8			64					

[1] Monkey kidney tissue culture antigen.
[2] Chorio-allantoic membrane extract antigen centrifuged for 1 hour at 20,000 r.p.m.—group specific antigen.
[3] Chick embryo extract antigen centrifuged for 1 hour at 30,000 r.p.m.

viruses, as shown through use of paired acute and convalescent serums from patients with HA and influenza virus infections.

In representative complement fixation tests, persons infected with both type 1 and type 2 showed no rises to influenza A, B, or C when tested against the group-specific CF antigens of these agents. Type 1 HA virus was shown to be different from Sendai, mumps, and CA viruses by these same serums. Type 2 HA virus was not related to mumps or CA virus, but showed a relationship to Sendai virus, which has recently been proposed as the prototype influenza D virus (*10*). Children who were infected with type 2 HA virus, and who developed complement fixing antibody for the homologous virus, also developed antibody for Sendai viral antigen but not for the Sendai chorio-allantoic membrane extract (soluble) antigen. Guinea pigs immunized with Sendai virus also developed CF antibody to type 2 HA virus, but in the hemagglutination inhibition and neutralization tests these agents were shown to be distinct (*1*).

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International Classification of Diseases Revised

The seventh revision of the Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death, effective January 1958, to be used by the United States and other members of the World Health Organization for the next 10 years, is now available in two volumes, at $3.50 for the set. The first volume contains the classification; the second, the alphabetical index. The Public Health Conference on Records and Statistics is again consolidating orders in the United States. Orders and checks payable to that organization may be addressed c/o Department of Health, Education, and Welfare, National Office of Vital Statistics, Washington 25, D. C.

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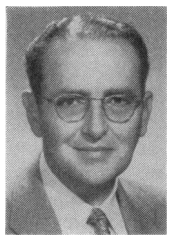
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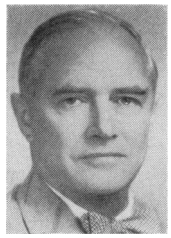
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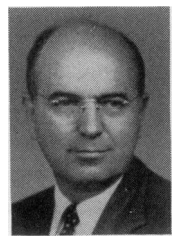
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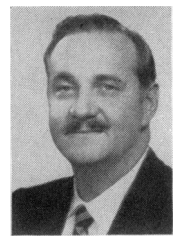
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Five new members will attend the April meeting of the Board of Editors of Public Health Reports. Retired from the Board are Harold M. Erickson, Lloyd Florio, Victor H. Haas, and Seward E. Miller.

Harold D. Chope, M.D., Dr.P.H., has been director of the San Mateo County (Calif.) Department of Public Health and Welfare since 1948. After taking his doctorate in public health from Harvard University (1940) where he had also been a Rockefeller Foundation fellow during work on his master's degree, he was, from 1940 to 1948, successively, associate in public health administration at Harvard; Rockefeller Foundation staff member in São Paulo, Brazil; and assistant district health officer, San Joaquin Local Health District, Stockton, Calif. Prior to 1940 he served as chief of the bureau of epidemiology, St. Louis City Health Department, assistant director of the California State Health Department, and health officer, Newton, Mass. From 1936 to 1941 he lectured at the Simmons School of Public Health Nursing and directed a field training unit at Harvard from 1935 to 1940. He was clinical professor of preventive medicine at Stanford University in 1955, and, from 1947 to the present, has been lecturer at the University of California School of Public Health.

J. Stewart Hunter, M.A., assistant to the Surgeon General of the Public Health Service since 1950, serves as staff adviser on public information and supervises the information and publications programs of the Service. From March 1953 until October 1955, at the request of the Department, he served as acting director of publications and reports for the Secretary of Health, Education, and Welfare. He came to the Service in June 1949 from a position as associate director of the public relations department of the Chicago office of J. Walter Thompson Co. After serving on the information staff of the Office of Price Administration during the early part of 1942, he saw active duty as lieutenant commander in the U. S. Naval Reserve from October 1942 to January 1946, the majority of the time as an officer on an aircraft carrier in the Pacific. Subsequently, he lectured in English at Northwestern University. He is a graduate of the University of Pittsburgh, where he taught from 1930 to 1942, except during 1937–38, when he served as associate and managing editor of the Pittsburgh *Bulletin Index*.

Charles V. Kidd, Ph.D., has been chief of the Office of Research Planning of the National Institutes of Health, Public Health Service, since 1949. He is also executive secretary of the consultants on medical research and education to the Secretary of Health, Education, and Welfare. In 1947 he was executive secretary of the President's Scientific Research Board, and later was a staff member of the President's Council of Economic Advisers. He received a Rockefeller public service award in 1955. He took an A.B. from Princeton in 1935, a diploma in history from Munich in 1936, and a Harvard doctorate in 1957.

Alexander D. Langmuir, M.D., M.P.H., has been chief of the Epidemiology Branch, Communicable Disease Center, Public Health Service, since 1949. From August 1942 to July 1946, he was the epidemiologist of the Commission on Acute Respiratory Diseases of the Army Epidemiological Board, Fort Bragg, N. C. He served in the New York State Department of Health from February 1937 to August 1942 in various capacities, including that of deputy commissioner of health of Westchester County. Before coming to the Communicable Disease Center, he was associate professor of epidemiology at Johns Hopkins School of Hygiene and Public Health for 3 years. In 1955 he served as a member of the WHO Committee on Poliomyelitis Vaccine. Since 1947 he has been consultant on biological warfare to the Secretary of Defense.

Wilson T. Sowder, M.D., M.P.H., Florida State health officer for the last 13 years, entered the Public Health Service as a commissioned officer in 1934. He served in hospitals, quarantine stations, and the Coast Guard, and in venereal disease control work in Tennessee and Florida. He was also a consultant on communicable diseases in the War Shipping Administration and consultant in the Service's regional office in Dallas, Tex., until his resignation in 1956 from the Regular Corps to remain in Florida. He took his medical degree in 1932 from the University of Virginia, and his master's degree in public health from the Johns Hopkins University in 1939.