State of Alaska Epidemiology **Bulletin**

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Bulletin No. 5
February 23, 1990
Children Should Not Use Aspirin During Influenza Season

On February 12, an Indian Health Service (IHS) physician reported a case of Reye syndrome in a 14-year-old Native male admitted to the Alaska Native Medical Center (ANMC). Eight days earlier, the patient developed an upper respiratory illness with fever, cough, and myalgias. During his illness, the patient took both acetaminophen and aspirin. On February 11, the patient began vomiting, developed generalized seizures, and was admitted to a satellite IHS hospital. His condition deteriorated and he was transferred to ANMC on February 12, where he was alternately combative, obtunded, and somnolent. The patient was intubated. On February 14, the patient's SGOT was 1,291 units/ml and the SGPT was 1,847 units/ml. The serum ammonia was 561 µg/dl on February 13 and 271 µg/dl on February 14 (normal: 40-70 µg/dl). The cerebrospinal fluid contained 7 WBC/mm3. On the basis of these findings, the diagnosis of Reye syndrome was made. On the evening of February 12, brainstem herniation developed, and on February 14, the patient died after discontinuation of life support. We are now investigating a second suspected case of Reye syndrome, also fatal, in a 14-year-old with acute hepatitis A.

Reye syndrome is a rare and severe complication of influenza and other viral diseases, (varicella, coxsackievirus, and echovirus infection). The acute illness has been described in children up to 15 years of age. Within one to three days of the acute viral infection, persistent vomiting with stupor may occur with progression to convulsions and coma. Signs of hepatic injury include an enlarged liver and elevated serum transaminases and serum ammonia levels. Prothrombin time can be prolonged. Jaundice is characteristically absent or minimal. Hypoglycemia and metabolic acidosis are other major laboratory findings. Histopathologic changes are characterized by extensive fatty vacuolization of hepatocytes and of renal tubular epithelium. The cause and pathogenesis are unknown. Prognosis depends on the severity of central nervous system depression. The mortality rate in Reye syndrome is approximately 30%. Death usually results from cerebral edema, respiratory arrest, or coma.

There is epidemiologic evidence linking Reye syndrome to aspirin use. Four studies between 1980 and 1982 demonstrated an association between Reye syndrome and the ingestion of aspirin during an antecedent respiratory illness or chickenpox. Further evidence includes a dose-response relationship between risk of Reye syndrome and the dose of aspirin ingested during the preceding illness. A marked decline in the use of aspirin among children in the United States has coincided with a dramatic decline in the incidence of Reye syndrome.

In the United States between 1976 and 1980, 250 to 550 cases per year were reported to Centers for Disease Control. However, annual case-counts since 1983, are as follows: 1983 (198), 1984 (204), 1985 (93), 1986 (101), 1987 (36) and 1988 (20). Annual case-counts since 1980 in Alaska are as follows: 1980 (2), 1981-1983 (0), 1984 (3), 1985 (1), 1986 (2), 1987 (2), and 1988-1989 (0).

The 1989-90 influenza season in Alaska began in November with a documented case in Fairbanks. To date, 85 influenza virus isolates have been confirmed by the State Public Health Laboratory-Fairbanks. Eighty-one (95%) of the isolates have been A/Shanghai/11/87 (H3N2). Two isolates each of A/Taiwan/1/86 (H1N1) and a B-Victoria-like strain have been identified. High absenteeism rates have been reported in Anchorage, Fairbanks, Ketchikan, and Barrow schools. The flu season in Alaska usually lasts through mid-March; last season, the isolates were found through April 15.

**Because of the possible links between aspirin and Reye syndrome and the presence of influenza throughout the state, we are advising physicians and other health care providers that children up to age 15 years should not use aspirin during the influenza season.**

Report all suspected or diagnosed cases of Reye syndrome immediately to the Section of Epidemiology (561-4406).

According to the Centers for Disease Control's surveillance case definition, the following criteria must be met to be considered a case of Reye syndrome: 1) acute, noninflammatory encephalopathy documented by alteration in the level of consciousness and either a) a record (if available) of cerebrospinal fluid containing < 8='"' leukocytes='"' per='"' mm3='"' or='"' b)='"' histologic='"' sections='"' of='"' the='"' brain='"' demonstrating='"' cerebral='"' edema='"' without='"' perivascular='"' or='"' meningeal='"' inflammation;='"' 2)='"' hepatopathy='"' documented='"' either='"' by='"' biopsy='"' or='"' autopsy='"' considered='"' to='"' be='"' diagnostic='"' of='"' reye='"' syndrome='"' or='"' by='"' at='"' least='"' a='"' threefold='"' rise='"' in='"' the='"' levels='"' of='"' either='"' serum='"' aspartate='"' aminotransferase='"' (sgot),='"' serum='"' alanine='"' aminotransferase='"' (sgpt),='"' or='"' serum='"' ammonia;='"' and='"' 3)='"' no='"' other='"' explanation='"' for='"' the='"' cerebral='"' or='"' hepatic='"' abnormalities.='">