Cases of selected enteric infections reported to the Colorado Department of Health, January 1, 1981–December 31, 1982

Agent	1981	1982	Total
Giardia	405	496	901
Salmonella	407	413	820
Shigella	425	416	841
Campylobacter jejuni	467	718	1,185
Total	1,704	2,043	3,747

The data on age distribution are similar to those reported from three Denver hospitals by Blaser and coworkers (*10*) and to patterns in other parts of the country (*11*). Clearly, *Campylobacter* infection is an important cause of infectious diarrhea in Colorado. Specific identification of the organism in persons ill with diarrhea (including bloody diarrhea) and fever is important, partly to distinguish the illness from other illnesses (for example, shigellosis and giardiasis) for which the specific treatment is different, partly because treatment with erythromycin rapidly renders patients noninfectious (*12*), and partly because identification of the agent in groups of sick persons can point to specific correctable or preventable sources of infection. Identification of the pathogen and specific treatment with erythromycin are particularly important when the sick person attends or works in a child-care facility; is a food handler; works in a hospital or nursing home; or in other ways puts large numbers of people, or particularly susceptible people, at risk of infection. (The value of treating asymptomatic convalescent carriers has not been established.) Followup of individual, apparently unconnected cases may lead to identification of unrecognized outbreaks in child-care centers or may uncover contaminated public water supplies or sources of contaminated food or milk.

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Nursing Home Residency After Head Injury

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Synopsis

A survey of 93 nursing homes in and near Rhode Island in May 1982 identified all head-injured patients who were State residents. Nineteen were identified, of whom ten were injured in motor vehicle crashes. The median age was 35 years. The median time since injury was 3 years and increased with age. The prevalence of such patients was 2 per 100,000 population.

Except for a recent survey by the Connecticut Department of Health, little is known about the prevalence or duration of nursing home residency

after head injury. To obtain such data, nursing homes in and near Rhode Island were surveyed for State residents who were patients because of head injury.

THE 1980 POPULATION OF RHODE ISLAND was 947,000, the median age was 31.8 years, and 95 percent were classified as white (*1*). For comparison, the United States population was 226,505,000, the median age was 30.0 years, and 83 percent were classified as white (*1*).

Population and Methods

Prevalence survey. In May 1982, the Rhode Island Department of Health mailed a questionnaire to all 88 skilled and intermediate care nursing homes and the single chronic disease hospital in the State, requesting information on all patients currently residing in their facilities who were admitted for head injury. In addition, the survey included four Massachusetts and Connecticut rehabilitation and chronic disease hospitals known to treat some head-injured patients from Rhode Island. (We term patients identified in any of these facilities "nursing home residents.") Persons were included in the prevalence sample if they were current nursing home patients, patients because of head injury, and Rhode Island residents when injured. Persons who were nursing home residents when injured were excluded. Thus, the point prevalence of nursing home residency due to head injury among Rhode Island residents was measured for May 1982.

The response to the mailed questionnaire was 100 percent. To validate the survey, facilities representing half of the nursing home beds in the State were randomly selected and visited. This second independent survey revealed no falsely identified cases and only one missed case. As in several recent surveys (*2–6*), the head injuries tabulated were limited to those caused by blunt or penetrating wounds.

Incidence survey. The Rhode Island Professional Activities Study (P.A.S.) system records all discharge diagnoses from all 14 Rhode Island community hospitals. According to the coding convention of the P.A.S. system, the external cause of injury is coded for incident (newly diagnosed) cases only. Thus, it was possible to identify all incident head injury cases discharged directly from acute care hospitals to nursing homes between January 1, 1979, and December 31, 1980. The "International Classification of Diseases, Adapted," (*7*) codes used to identify head injury cases were 800–801.9, 803–804.9, and 850–854.9. These codes were chosen because they include all head injuries likely to include brain injuries (*4–6*), and they were likely to identify all head-injured cases at risk for nursing home admission subsequent to head injury. Tabulation was limited to patients who were Rhode Island residents at the time of injury. Thus, the incidence measured was the mean annual incidence for 1979 and 1980 of direct admission (transfer) to nursing homes of head-injured Rhode Island residents hospitalized in Rhode Island.

To confirm that the P.A.S. records did not include external cause of injury codes for prevalent cases (such as those previously admitted for the same head injury), 165 head injury cases with external cause of injury codes were selected from a single large academic hospital. Records were available for 152 (92 percent), and these indicated that all but 1 were incident cases.

Results

Prevalence survey. Nineteen head-injured State residents were in 14 nursing homes and 3 chronic care and rehabilitation hospitals (table 1). One of the 19 was located in one of the out-of-State facilities surveyed. Four additional residents (excluded from tabulation) were patients because of anoxic brain damage. Of the 19 patients, 10 were injured in motor vehicle collisions, 3 in assaults, 3 in falls, 1 in a suicide attempt, 1 from an unintentional gunshot wound, and 1 from an unknown cause. The ages ranged from 12 to 74 years, with a median of 35 years. Eleven of the patients were males.

The prevalence of head-injured persons residing in nursing homes increased with increasing age (table 2).

The degree of disability was described in terms of "activities of daily living" recorded in the questionnaire. These were walking (with assistance if needed), continence, eating (with assistance if needed), and dressing (with assistance if needed). Seven patients could not carry out any of these activities and three patients could carry out only one (table 1).

The time from injury to the survey date increased

Table 1. Head-injured nursing home patients who are Rhode Island residents

Sex	Age in May 1982	Months from injury	Months from admission[1]	Cause of injury	Walk with help	Continent[2]	Helps feed self	Helps dress
Male	12	1	1	Gunshot wound[3]	Yes	Yes	Yes	Yes
Female ..	20	13	12	Motor vehicle crash	No	No	Yes	Yes
Female ..	22	13	2	Motor vehicle crash	Yes	Yes	Yes	Yes
Female ..	23	35	24	Motor vehicle crash	No	No	No	No
Male	26	21	14	Fall	No	No	No	No
Male	29	53	52	Suicide attempt	No	No	No	No
Male	31	9	2	Motor vehicle crash	No	No	Yes	No
Female ..	31	6	2	Motor vehicle crash	No	No	No	No
Female ..	35	[4]50	47	Motor vehicle crash	No	No	No	No
Male	38	[5]90	6	Motor vehicle crash	Yes	Yes	Yes	Yes
Male	41	55	30	Assault	No	No	No	No
Male	44	73	43	Motor vehicle crash	Yes	Yes	Yes	Yes
Male	51	42	40	Motor vehicle crash	No	No	No	No
Male	65	94	33	Assault	No	No	No	Yes
Male	66	22	18	Motor vehicle crash	Yes	No	No	No
Male	66	Unknown	99	Assault	Yes	Yes	Yes	Yes
Female ..	66	102	44	Unknown	No	No	Yes	Yes
Female ..	73	19	19	Fall	Yes	Yes	Yes	Yes
Female ..	74	9	8	Fall	Yes	Yes	No	Yes

[1] Months from admission to current nursing home until May 1982.
[2] Continence of bowel and bladder.
[3] Not intentional.
[4] Plus or minus 3 months.
[5] Plus or minus 6 months.

Table 2. Nursing home residency for head injury, prevalence and time since injury by age group, Rhode Island residents

Age (years)	Observed cases	State population	Prevalence (cases per 100,000)	Median time since injury (months)
0–34	8	518,400	1.5	13
34–64	5	301,900	1.7	55
65 or older ..	6	126,900	4.7	58
All	19	947,200	2.0	35

Table 3. Discharge from hospital to nursing home, head injured Rhode Island residents, incidence by age (1979–1980)

Age group	Number of cases[1]	Annual rate per 100,000 of population)	Upper estimate[2] of mean length of stay (months)
0–34	4	0.4	45
35–64	10	1.7	12
65–74	6	4.0	14
75–84	28	35.5	0
85 or older	14	58.4	0
Total	62	3.3	7

[1] From P.A.S. discharge data.
[2] Estimate is the ratio of prevalence from table 2 to the component of incidence displayed in table 3. Since the latter is an underestimate, the ratio is an upper estimate of the mean length of stay.

with age. The median time was 35 months for the entire group, 1 year for patients aged 34 or younger, and more than 4 years for patients aged 35 or older.

The time from injury to admission into the current nursing home ranged from less than 1 month to more than 7 years.

Incidence survey. The 2-year sample identified 62 persons with incident head injury who were discharged from hospitals directly to nursing homes, which is an annual incidence rate of 3 per 100,000 population per year. Annual incidence increased markedly with age, ranging from less than 1 per 100,000 for those under age 35 to 58 per 100,000 for those over age 84 (table 3).

These estimates are based on admissions of head-injured persons from acute care hospitals directly into nursing homes. They do not include persons admitted indirectly through some second institution or after a stay at home. Thus, they are likely to be underestimates of the incidence of admission to nursing homes after head injury.

Discussion

Prevalence survey. The prevalence estimates found in this study are consistent with those found in Connecticut (*8*). Both studies indicate a prevalence of approximately 2 cases per 100,000 persons. This

estimate is conservative, because some head-injured Rhode Island residents may be patients in nursing homes far from that State and would have been missed by this study. Moreover, the incidence of fatal motor vehicle injury in Rhode Island is only 60 percent of the national incidence (*1,9*). If non-fatal motor vehicle crashes are also less common, one of the major causes of serious head injury is underrepresented in Rhode Island. Connecticut also has a motor vehicle fatality incidence lower than the national average.

In Rhode Island, the average price paid by Blue Cross for a nursing home bed alone (excluding medications, medical care, special nursing care, and rehabilitation services) was $50 per day in 1981 (*10*). Thus, based on 1981 charges, the annual price of the beds occupied by the 19 Rhode Island residents confined to nursing homes because of head injuries was $347,000, exclusive of medications and professional services.

Young patients rarely remain in nursing homes for long periods after head injury. The reasons for this are not known. Some may have improved, others may have died, and still others may have been transferred, without substantial improvement, to different care, including home care. It is unknown how often, if ever, patients leave nursing home care for home care because the cost of nursing home care cannot be paid.

For many patients, a relatively long time passed between the injury and admission to the current nursing home. This might occur for a patient who had a long stay in an acute care hospital, who went into the nursing home system indirectly (after a stay at home), or who had made one or more transfers between nursing homes.

Incidence survey. The incidence of nursing home admission subsequent to head injury rises sharply with increasing age. This may reflect an age-dependent increase in the incidence of head injury cases requiring nursing home care. Other causes also should be considered, including the possibility that third party payment sources (for example, private insurance or Medicare) adequate for nursing home care may increase with age. It is possible that intensive rehabilitation is attempted less often in older head-injured patients, and consequently they would enter nursing homes directly from acute care hospitals more often than younger patients. Only such direct admissions are tabulated in this study. Finally, it is possible that home care is less commonly available to older patients after acute hospitalization.

Incidence-prevalence data comparison. Although the date of arrival at the current nursing home was known for each patient, the length of stay in the nursing home system—that is, the time from entry into any nursing home to discharge from the system—was not known. Therefore, an indirect measure of length of stay was needed. The ratio of prevalence (table 2) to incidence (table 3) is an estimate of the mean length of stay in the nursing home. Since the incidence rates are likely to be underestimates, the ratios based on these rates are likely to overestimate the mean length of stay.

Though the incidence of nursing home admission for head-injured people aged 75 or older was the highest of any age group in the population, no prevalent cases were observed. Thus, such patients must have very short stays. In view of the high mortality of hospitalized older people, it is likely that their short nursing home stays represent deaths soon after admission.

The considerable economic and social costs of head injuries include the costs of fatal injuries, injuries that do not require nursing home care, and the injuries that require nursing home care as described in the present paper. Many head injuries may be prevented by such countermeasures as improving protection of motor vehicle occupants with passive restraint systems, reducing drunk driving, and helmet use by motorcyclists. Measures that would prevent head injuries due to falls or assaults are not as well documented. In view of the economic and social costs imposed by head injuries, they have received insufficient attention as a public health problem.

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Perinatal Needs of Immigrant Hmong Women: Surveys of Women and Health Care Providers

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Synopsis

The Hill People of Laos in Southeast Asia, who are called the Hmong, are from a primitive culture which has had a written language for only 31 years. By 1980, about 3,000 of them were living in Colorado, one of 9 States to which they had migrated.

In an effort to determine whether or not local health care service was accessible and acceptable to child-bearing families, a pilot survey was conducted in the Denver area. The survey consisted of interviews of the Hmong women themselves and questions of area health care providers.

The interviews proved to be both difficult and illuminating. They were difficult because of the language barrier, which required exclusive use of interpreters, and because of the diffidence of the women themselves, especially in discussing matters of sex and childbearing.

Illumination came from learning Hmong customs and culture and some of the benefits of their version of self-care. It also came from whatever value may lie in applying this knowledge to other immigrant ethnic groups with comparable problems.

Responses to questionnaires from the health care providers disclosed that, from their viewpoint, principal Hmong concerns were family planning and nutrition. They also revealed surprisingly few maternal or child deaths among the Hmong.

There still exists a need for both cross-sectional and longitudinal studies to document the effect of migration on the Hmong.

SINCE 1975, SIGNIFICANT NUMBERS OF HMONG—the Hill People of Laos—have immigrated to nine States in this country: California, Colorado, Illinois, Minnesota, Montana, Oregon, Rhode Island, Washington, and Wisconsin. By 1980, there were 3,000 in Colorado, 2,500 of whom lived in the Denver area, and 500 in Boulder, 50 miles away.

The Hmong are a primitive people, with a written language only since 1954 (*1,2*). Within the language are several dialects. Most of the Hmong speak little or no English, and the conventional wisdom is that they are shy, leery of strangers, and tend to provide answers they feel will please the questioner (*2,3,4*). It is also felt that Hmong women, besides sharing these characteristics, display deference to men and a reluctance to discuss intimate subjects like sex and childbearing in their presence (*3,5*). Of the Hmong with enough English to act as interpreters, the majority are men.

Beyond that, the Hmong are the products of a similarly primitive health care system in which the women often deliver their own children by themselves at home, with minimal support from their husbands and local "healers" (*2,4,6*).

Providing health care, particularly perinatal care, to these refugees is made extraordinarily difficult because of their history and traditions. The result is that the Hmong women may become underserved by that system.

But it is possible that the Hmong and American health care providers can learn from each other. The attempt to learn from the Hmong, difficult and