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## Health and the Urban Environment

### XI. The Incidence and Burden of Minor Illness in a Healthy Population: Methods, Symptoms, and Incidence<sup>1-4</sup>

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#### SUMMARY

A longitudinal study of a group of Manhattan residents was performed in the Cornell Family Illness Study. Weekly observations of 14 acute symptoms were made by interview. The symptoms were combined into syndromes by occurrence, and episodes of syndromes were considered illnesses. Analysis of illness in this population showed results similar in incidence, frequency, and symptoms to those of a number of similar studies, despite differences in definitions and methods.

The 1,707 subjects of the study yielded 1,168 person-years of information. Respiratory illnesses accounted for 60 per cent of all illnesses and 81 per cent of the person-days of illness. The average respiratory illness lasted 9.4 days (6 days longer than the average nonrespiratory illnesses).

The incidence of "common cold" was 3.4 per person per year; the incidence of all respiratory illnesses was 4.6 per person per year. The rate decreased with age, and those younger than 5 years had twice the rate of that in older persons. The rate for women was greater than that for men, and the rate for whites was greater than that for either Negroes or Puerto Ricans.

#### Introduction

Although minor respiratory illness is commonly considered to be the largest cause of disability in normal populations, definitive longitudinal studies have been limited by

the technical difficulties involved and by the inadequacy of present diagnostic tools. The opportunity to explore these illnesses in natural settings has been limited, and reported information concerning their frequency, duration, severity, recurrence, familial spread, and incubation periods is conflicting.

Past studies by other investigators (1-9), and the National Health Survey (10, 11) provide most of the current knowledge of the frequency of these minor illnesses. In most of these studies, incidence, secondary

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attack rates, seasonal patterns, recurrences, and age-sex differences were examined. The criteria used to define an illness and the populations observed differed among the studies, and the findings reported have not yet been adequately compared.

These epidemiologic studies yielded less information concerning incubation periods, differences in symptoms, duration and severity of minor illnesses, and intervals between successive illnesses than did the experimental studies of Andrewes (12), Roden (13) and Tyrell (14) in England, and those of Jackson and associates (15) and Lefkowitz and co-authors (16) in the United States.

In this paper, the results of the studies cited are compared with each other, and with the results of the Cornell Family Illness Study. Because these studies were all concerned with the occurrence of common respiratory illness in family groups, one might expect a basic similarity in results, and that any differences noted could be ascribed to differences in methods. When similarities are found, the patterns of illness described may be assumed to represent similar illnesses and, probably, similar environmental influences.

### Materials and Methods

The Cornell Family Illness Study, which has been described more completely by McCarroll and associates (17), followed 448 Manhattan families for as long as 3 years (1962 to 65). The families were volunteers from a 2-stage cluster sample of lower Manhattan with representatives of the most common age, race, and family structure groups of lower Manhattan to ensure representation of the characteristics of family composition, ethnic, social, and economic variables. Each family was observed for an average of 45 weeks, during which weekly visits were conducted by interviewers asking standardized questions regarding acute symptoms, exacerbations of chronic illness, and general well-being. An average of 35 weekly reports (range: 4 to 129) was completed for the subjects, providing data for 1,707 persons, representing 1,168 person-years of observation. In addition to the weekly symptom information, various baseline data (e.g., demographic, social, and medical histories) were

obtained for each subject. Both types of information were used in this report.

As in most studies of this type, reporting within the household was usually performed by the mother, or her equivalent (approximately 85 per cent of interviews). Although no diagnostic tools were used to confirm illnesses, the efficacy of such methods has been considered slight in the epidemiologic study of most acute minor illnesses (4, 6, 15, 18). Lack of professional medical observation of specific illness also posed some problems in the interpretation of some symptoms. These, unfortunately, are problems of all such field studies. For this report, responses by the subjects were accepted without laboratory confirmation. The 14 acute symptoms concerning which subjects were questioned weekly are listed in table 1. The day of onset and the duration of each symptom were determined for each reported occurrence.

The weekly questionnaire asked for daily information on 14 acute symptoms. The questions were in the following form: "Did you have a sore throat this week? (If yes) on what days did it occur?" The first analyses considered the order and arrangement of combinations of symptoms, as suggested by Van Volkenburgh and Frost (1), and illness groups were determined from this analysis to represent characteristically different syndromes. Although these syndromes

TABLE 1  
REPORTED DAYS OF RESPONSE  
FOR 14 ACUTE SYMPTOMS FOR  
THE TOTAL POPULATION

Symptom	Days (no.)	Per Cent of Total Days
"Common cold"	34,766	8.16
Rhinitis	34,242	8.04
Cough*	22,304	5.23
Headache†	10,419	2.45
Eye irritation	7,821	1.84
Sore throat†	7,697	1.81
Myalgia†	5,028	1.18
Whistling/wheezing*	3,283	0.77
Subjective fever	2,982	0.70
Abdominal cramps	2,966	0.70
Nausea†	2,349	0.55
Diarrhea	1,792	0.42
Vomiting	1,388	0.33
Cervical lymphadenopathy	726	0.17
Total	137,763	32.33
Total person-days	426,076	

\*Non-chronic.

†Asked only for those 5 or more years of age.

