

## Group A Meningococcal Disease in Skid Rows: Epidemiology and Implications for Control

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**Abstract:** Interviews conducted during outbreaks of group A meningococcal disease in skid row communities suggested that heavy alcohol use was associated with increased risk of disease. Frequent moving within skid row and from one skid row to another was characteristic of a subpopulation with increased risk of disease and may have facilitated spread within and between skid rows. The observations discussed herein have important implications for control of communicable diseases in and near skid rows. (*Am J Public Health* 1984; 74:253-254.)

Beginning in June 1975, group A meningococcal disease occurred in outbreaks in the skid row communities of Seattle, Washington, and Portland, Oregon, after having been nearly absent from the United States for three decades.<sup>1</sup> Disease then appeared in the Anchorage and Fairbanks, Alaska, skid rows. Finally, a few cases occurred sporadically in other parts of Alaska.<sup>1,2</sup> Despite the propensity for group A meningococci to cause large, widespread epidemics, disease in these outbreaks was confined almost entirely to skid row people. Outbreaks of pneumococcal disease<sup>3</sup> and diphtheria<sup>4,6</sup> have also occurred in skid rows and have also been confined almost entirely to skid row people.

During the meningococcal disease outbreaks in Seattle and Portland, certain observations were made which may explain some of the recurring epidemiologic features of bacterial diseases in skid rows.

### Methods

Standardized interviews were conducted with three groups of people. The first were adult patients with culture-proved group A meningococcal meningitis or septicemia reported in Washington or Oregon in the period June 1975 through mid-July 1976. During the outbreaks, it was observed that several of these patients had no address, lived outdoors, or slept outside the skid row areas but spent most of their waking hours inside skid rows, especially in one neighborhood in Seattle. The people in this neighborhood were a small, distinct community within the Seattle skid row. We knew of no way to adequately select a random sample from this community. Instead, a second group of 44 people was arbitrarily selected and interviewed at places in this neighborhood (two missions, a hotel, and a park) known

to have been frequented by at least one person with meningococcal disease; they are referred to as neighborhood representatives.

The third group interviewed consisted of the 185 subjects of a sociologic study of the Seattle skid row done in 1975.<sup>7</sup> These subjects were randomly selected in apartments, hotels, and missions throughout the Seattle skid row; they are referred to as skid row representatives.

### Results

Eight of the nine interviewed adult patients reported daily or frequent binge drinking whereas only 18 of 38 neighborhood representatives did so. Except for alcohol use, characteristics of adult patients were similar to those of neighborhood representatives.

Neighborhood representatives differed in three respects from skid row representatives: they were more mobile, younger, and a greater proportion were American Indian (Table 1). Most previous residences of neighborhood representatives were in the Seattle skid row or in other skid rows. Similar proportions of the two groups drank alcohol daily or in frequent binges.

### Discussion

The observations made in this study must be interpreted with unusual caution for two reasons. First, the population at risk could not be precisely defined and a strictly defined control group could not be randomly selected. Differences between patients, neighborhood representatives, and skid row representatives suggest explanations for the course of events but do not prove them, and statistical tests cannot properly be applied to differences between the groups. Second, since alcoholism and other conditions likely to diminish the reliability of responses to interviews are common in skid rows, epidemiologic studies in skid rows will be less accurate than in other populations.

Since heavy alcohol use was more common in patients than in neighborhood or skid row representatives, it was associated with increased risk of meningococcal disease in individuals. This association has been noted before for meningococcal disease<sup>8</sup> and diphtheria.<sup>4</sup> How alcohol was related to increased risk is not known.

The large proportion of American Indians in the high risk neighborhood in Seattle, where disease in the Pacific Northwest first appeared, may explain how meningococci arrived there. The only previous known North American outbreaks of group A meningococcal disease since the 1940s were among American Indians in Manitoba in the early 1970s,<sup>9</sup> and meningococci from all of these outbreaks were of the same LPS type.\* Meningococci may have spread from Manitoba to Seattle through Indian populations.

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\*Wendell Zollinger, PhD, personal communication.

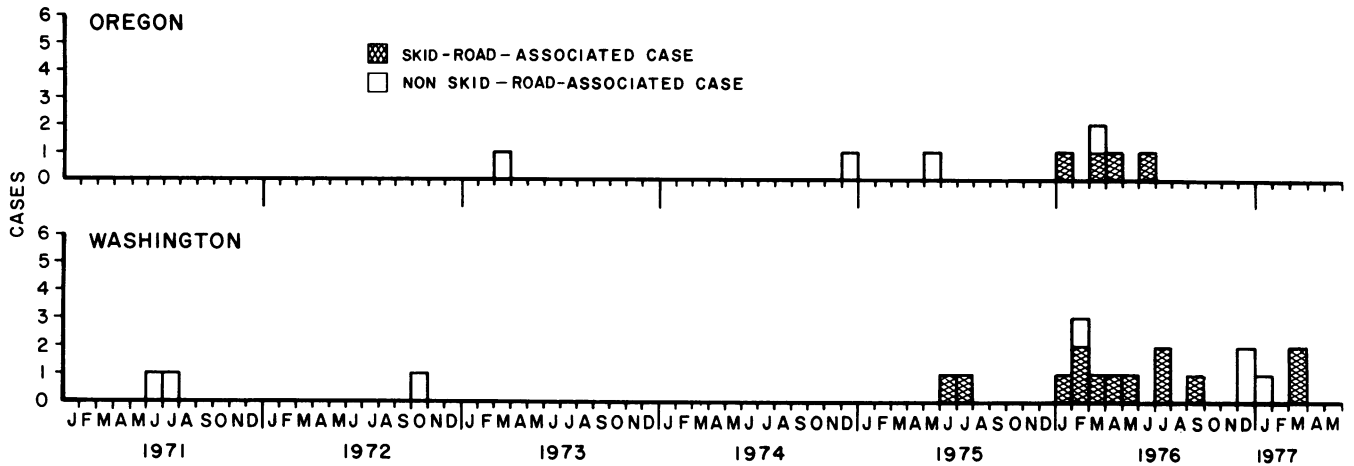


FIGURE 1—Meningococcal Disease Outbreaks in Skid Row Communities of Seattle, Washington, and Portland, Oregon, 1975–77.

TABLE 1—Characteristics of Neighborhood Representatives and Skid Row Representatives, Seattle, 1975–1976

| Group                        | Mean Age (yrs) | Proportion Indian | Median Time at Current Residence (Months) | Median Time in Seattle (Months) | Daily or Frequent Binge Drinking (Per Cent) |
|------------------------------|----------------|-------------------|---|---------------------------------|---|
| Neighborhood Representatives | 42             | 20/43             | 2.5                                       | 9                               | 47  |
| Skid Row Representatives     | 55             | 20/185            | 12.5                                      | 84                              | 42  |

Previous studies<sup>10</sup> have found that skid row people move frequently, usually within skid rows or from one skid row to another, thus frequently coming into close contact with new people. This may contribute to the spread of pathogens like meningococci, pneumococci, and *C. diphtheriae* which require close, prolonged contact for transmission. This kind of close contact is unusual between skid row people and others in society, and may explain why these diseases remain confined to skid rows. When outbreaks with pathogens like these occur in skid rows, the Seattle experience suggests that control measures are not necessary to prevent spread to nearby non-skid row populations.

In contrast, outbreaks of meningococcal disease and diphtheria<sup>4</sup> have spread from skid row to skid row, presumably because of the frequent moving of skid row people from one skid row to another. In Seattle, meningococcal disease was most common in a community with unusually frequent travel between Seattle and other places, usually other skid rows. Thus when outbreaks with pathogens like these occur in skid rows, the Seattle experience suggests that surveillance should be conducted in nearby skid rows.

**ACKNOWLEDGMENTS**

The authors are grateful to Barret A. Lee, PhD, for providing data about the Seattle Skid Row and for his advice.

**REFERENCES**

- Center for Disease Control: Followup on meningococcal disease—Alaska, Oregon, Washington. *MMWR* 1977; 26:101–102.
- Center for Disease Control: Meningococcal disease—Alaska 1976–1977. *MMWR* 1978; 27:121–122.
- DeMaria A Jr, Browne K, Berk SL, et al: An outbreak of type I pneumococcal pneumonia in a men’s shelter. *JAMA* 1980; 244:1446–1449.
- Pedersen AHB, Spearman J, Tronca E, et al: Diphtheria on Skid Row, Seattle, Washington, 1972–1975. *Public Health Rep* 1977; 92:336–342.
- Heath CW Jr, Zusman J: An outbreak of diphtheria among Skid Row men. *N Engl J Med* 1962; 267:809–812.
- Center for Disease Control: Epidemiological report. Diphtheria—Alaska. *MMWR* 1962; 11:82–88.
- Lee BA: Residential mobility in Skid Row: disaffiliation, powerlessness, and decision making. *Demography* 1978; 15:285–300.
- Pettay YO: An epidemic due to type A sulfa-resistant meningococci in Finland. Presented at the Scottish-Scandinavian Congress of Infectious Diseases, Bergen, Norway, May 27–30, 1974.
- Center for Disease Control. Meningococcal meningitis. *MMWR* 1972; 21:89–91.
- Bogue DJ: Skid Row in American cities. Chicago: Community and Family Study Center, University of Chicago, 1963.