

Why Does Family Homelessness Occur? A Case-Control Study

ELLEN L. BASSUK, MD, AND LYNN ROSENBERG, ScD

Abstract: We compared 49 homeless female-headed families with 81 housed female-headed families in Boston. Most housed families were living in public or private subsidized housing. In both groups the mothers were poor, currently single, had little work experience, and had been on welfare for long periods. Many of their children had serious developmental and emotional problems. Homeless mothers had more frequently been abused as children and battered as adults and their support networks were fragmented; the housed mothers had female relatives and extended family living nearby whom they saw often. The frequency of drug, alcohol, and serious psychiatric problems was greater among the homeless mothers.

The homeless mothers may have been more vulnerable to the current housing shortage because they lacked support in time of need. This, in turn, may have been due to their history of family violence. Psychiatric disabilities may have been another contributing factor in the minority of homeless women. The notion that a "culture of poverty" accounts for homelessness was not supported by the data since the homeless were less likely to have grown up in families on welfare. The data suggest that solutions to family homelessness in the current housing market require an increase in the supply of decent affordable housing, income maintenance, and assistance from social welfare agencies focused on rebuilding supportive relationships. (*Am J Public Health* 1988; 78:783-788.)

Introduction

In the last several years, homelessness has become part of the life experience of growing numbers of American women and children. Homeless families, generally headed by women, may account for one-third of the estimated homeless population of 2.5 million people, and are the fastest growing subgroup.^{1,2}

Despite the magnitude and seriousness of the problem of family homelessness, little is known about its antecedents, course, and consequences. Researchers have described serious unmet medical needs³⁻⁶ and emotional problems⁷⁻⁹ of homeless families, but no systematic comparison of homeless and housed families has been carried out. This report describes a sample of homeless and housed families from Boston, Massachusetts; the major purpose was to identify some of the unique correlates of family homelessness.

Methods

Subjects

Homeless Families—Eligible subjects were all members of homeless families (at least one parent with at least one minor child, or a pregnant woman) residing in family shelters in Boston from April to July 1985. Families in shelters for battered women, in facilities serving specialized populations (e.g., teenage mothers), and in facilities housing fewer than three families were not eligible.

We were able to arrange access to six of eight family shelters. Members of 50 homeless families with 90 children out of a possible 64 families with 105 children were interviewed. One family, headed by a married couple, was excluded, leaving 49 female-headed families with 86 children. Nonparticipating families were similar to participants in terms of age, gender, and ethnicity of the parent, the length of stay at the shelter, family size, and the children's ages and gender.

The sample most likely underrepresented Hispanics since we were unable to arrange access to one shelter that houses Hispanic families primarily. Homeless families with serious behavioral or emotional problems also may have been underrepresented since the larger shelters turn away approximately 10 to 15 families each week, usually excluding first those exhibiting behavioral problems.

Housed Families—Since the homeless families were headed by females, we decided that an appropriate comparison group would consist of Boston families headed by women who were poor (i.e., likely to be on welfare) but who were housed. Families sharing apartments as well as primary tenants were included.

To locate eligible housed families, we used 1980 census information to identify blocks in Boston with a high prevalence of poor families headed by women. These were blocks with at least 33 per cent of the residents living below the poverty level and at least 50 per cent of the households headed by women, and in which there were at least 10 such households. Twenty-eight such blocks were identified, in 12 census tracts, primarily in Dorchester and Roxbury.

We had planned to frequency-match the ethnic distribution of the housed families to that of the homeless families (of which about one-third were White). Once in the field, it became necessary to modify the study design. The ethnic distribution of some neighborhoods had changed since the 1980 census and the number of White families was less than anticipated. Therefore, we identified additional blocks in which at least 90 per cent of the households were White, at least 33 per cent of the residents were living below the poverty level, at least 43 per cent of the households were headed by females, and where there were at least 10 such households. There were eight such blocks, primarily in South Boston and East Boston.

We had planned to sample the selected blocks randomly and to obtain participating families from each block in proportion to the numbers of families on that block. Once in the field, we found this to be infeasible since in many instances no one was home. Once it became known that we were carrying money to pay participating families, safety considerations prevented us from returning if a family was not home. We therefore knocked on consecutive doors in each block until the projected numbers of participants had been enrolled. Among the 820 households approached, there was no one home at 464, and 238 did not meet the definition

Address reprint requests to Ellen L. Bassuk, MD, 20 Randolph Road, Chestnut Hill, MA 02167. Her affiliation is with the Department of Psychiatry, Harvard Medical School; and Center for Health and Human Resources Policy, John F. Kennedy School of Government, Harvard University. Currently, Dr. Rosenberg is with the Slone Epidemiology Unit, Boston University School of Medicine, 1371 Beacon Street, Brookline, MA 02146, which is also the affiliation for Dr. Rosenberg. This paper, submitted to the *Journal* September 25, 1987, was revised and accepted for publication January 5, 1988.

of a female-headed family. Of 118 eligible female-headed families, 37 refused to participate and the remaining 81 were interviewed on weekdays during daylight hours from April to July 1986, the same months during which data on homeless families were obtained one year before.

Data Collection

The data were collected by personal interview of the mothers and children by a psychiatrist (ELB) or psychologist. A bodyguard accompanied the interviewers during the data collection from the housed families. We obtained written informed consent from the mother to interview all members of the family. Housed families were offered monetary incentives to participate. Most questions were the same for the housed and homeless mothers, although some were modified to account for differences in housing.

Mothers—A semi-structured interview consisting of approximately 260 questions was administered to each mother to obtain information on demographic factors; developmental background including early relationships with caretakers; family disruptions and patterns of violence; housing, income, and work histories; nature of relationships; parenting; medical and psychiatric histories; and use of services. In addition, a structured questionnaire, the Social Support Network Inventory,¹⁰ was modified and administered. Psychiatric diagnoses were made by a psychiatrist (ELB) using DSM-III inclusion and exclusion criteria.¹¹ These diagnoses were made on the basis of responses to the semi-structured interview and probes. Although some controversy exists about the reliability and validity of various DSM-III diagnoses,¹¹ the use of such criteria has been reported to enhance agreement among clinicians and investigators.

Children—The interviewer played with or talked to each child before administering standardized instruments. The Denver Developmental Screening Test^{12,13} was used to assess children five years of age or younger, and the Children's Depression Inventory¹⁴ and the Children's Manifest Anxiety Scale¹⁵ were administered to older children.

Data Analysis

Univariate analyses were carried out in which the proportion of homeless mothers with a particular characteristic was compared with the corresponding proportion among housed mothers. These comparisons were based on those with known values of a particular factor. Multiple logistic regression analysis was used to assess the relation of several factors at once to homelessness.¹⁶

In the results described below, the differences cited were generally present in the two major ethnic groups in the study, Whites and Blacks.

Results

The Mothers

General Characteristics—As shown in Table 1, the homeless and housed mothers were similar in terms of age and ethnic group. Almost all the mothers were currently single, but a greater proportion of homeless than housed mothers had been married. The homeless and housed women became mothers for the first time at similar ages and had similar numbers of children. Almost all the families were receiving welfare, and about half of each group had been receiving aid for dependent children (AFDC) longer than four years.

Half of the homeless mothers and one-third of the housed mothers grew up outside the Boston area, and 24 per

TABLE 1—Selected Characteristics of 49 Homeless and 81 Housed Families

Characteristics	Homeless	Housed
Age of Mother (years)		
Mean	28	29
Range	18 to 49	18 to 58
Mean Age at Birth of First Child	20	19
Mean Number of Children	2.4	2.5
Ethnic Group	No. (%)	No. (%)
White	16 (33)	26 (32)
Non-White	33 (67)	55 (68)
Marital Status		
Single	28 (57)	61 (75)
Divorced/Separated/Widowed	20 (41)	19 (24)
Married	1 (2)	1 (1)
Education*		
Less than 12 years	17 (36)	52 (64)
High school graduate	18 (38)	24 (30)
Some college	12 (26)	5 (6)
Employment History		
Some work experience	18 (37)	30 (37)
Worked occasionally	12 (24)	13 (16)
Minimal or never worked	19 (39)	38 (47)
Currently Receiving Welfare	47 (96)	81 (100)
Length of Time on Welfare*		
<2 years	16 (35)	26 (32)
2-4 years	12 (26)	14 (17)
>4 years	18 (39)	41 (51)

*% of those with known values

cent and 11 per cent, respectively, grew up outside the United States.

The homeless women reported a higher level of educational attainment than the housed. Employment histories of the two groups were similar, with more than half having worked only occasionally or not at all.

The homeless mothers had moved much more frequently than the housed mothers. In the previous five years, none of the homeless mothers had moved less than twice, two-thirds had moved at least four times, and one-fourth had moved at least 10 times; in contrast, two-thirds of the housed mothers had moved once or not at all, 5 per cent had moved at least four times, and none had moved 10 or more times. In the previous year alone, the homeless mothers had moved an average of four times.

The homeless mothers had more frequently lived with a man or doubled up with friends or relatives and had less frequently lived independently. Sixty-seven per cent of the homeless compared to 12 per cent of the housed families had previously stayed in an emergency shelter or welfare hotel. Just before the current shelter stay, only 14 per cent of the homeless were living independently (8 per cent in non-subsidized apartments, and 6 per cent in subsidized housing), and 85 per cent were doubled up. By contrast, at the time of the interview, 72 per cent of housed mothers were living in public housing or subsidized apartments (of which two-thirds were in housing projects), 5 per cent in non-subsidized apartments, and 23 per cent were doubled up.

The Mother's Childhood—The homeless mothers had less frequently been born into households headed by women than the housed mothers (29 per cent vs 48 per cent), but by the time of adolescence about two-thirds of each group were living in female-headed households.

The fathers of the homeless women were more available to them in childhood; those men were more frequently the fathers of the siblings of the now homeless mothers and were more likely to keep in contact with their daughters than were

TABLE 2—Supports of 49 Homeless and 81 Housed Mothers

Support Named	Homeless		Housed	
	No.	(%)	No.	(%)
Number of Adult Supports				
None	11	(22)	2	(2)
1	13	(26)	6	(7)
2	12	(24)	13	(16)
3	13	(26)	60	(74)
Minor Child Named as Support	15	(31)	3	(4)
Type of Adult Support Named (not mutually exclusive)				
Mother	12	(24)	49	(60)
Father	5	(10)	8	(10)
Other Family Member*	14	(29)	63	(78)
Spouse/Boyfriend	13	(27)	14	(17)
Friend	15	(31)	28	(35)
Professional	4	(8)	1	(1)
Gender of Adult Supports*†				
Male	27	(46)	42	(27)
Female	32	(54)	113	(73)
Frequency of Contact with Adult Supports				
Monthly or less	26	(34)	15	(7)
Weekly	24	(32)	57	(27)
Daily	26	(34)	140	(66)

*Members of mother's family excluding mother, father, and spouse/boyfriend
†Other than mother and father

the fathers of the housed women. They also were less likely (45 per cent vs 69 per cent) to have such problems as alcoholism, physical illness, mental illness, and poverty.

The mothers of the homeless women had less commonly received AFDC than mothers of the housed women (30 per cent vs 58 per cent) while a greater proportion of the mothers of the homeless women than housed women had worked (70 per cent vs 35 per cent).

Similar proportions of homeless (69 per cent) and housed mothers (57 per cent) reported a major family disruption (e.g., divorce, death) during childhood; the age at the time of the first disruption and the nature of the disruption were also similar.

Having been abused as a child was much more frequently reported by homeless (17 of 41 who were willing to answer) than by housed mothers (5 per cent).

Current Relationships—When the mothers were asked to name up to three supports (i.e., people on whom they could count during times of stress), housed mothers reported many more supports than the homeless (Table 2): 22 per cent of the homeless compared with only 2 per cent of the housed mothers were unable to name any adult supports, while 26 per cent and 74 per cent, respectively, named three adult supports. The homeless women less frequently named their mothers or other family members as supports and more frequently named a minor child. The housed mothers more commonly named females among their supports than did the homeless. In addition, two-thirds of the adult supports of housed mothers were seen daily compared to one-third of the homeless supports. These patterns held for women who had grown up in the Boston area and for those who had not.

Twenty-eight per cent of the housed mothers reported that one or more family members outside the nuclear family were living with them, and about half had members of their extended family living in the same housing project or within walking distance.

Relationships with Men—The homeless mothers tended to have had fewer major relationships with men than the housed women, and this was so within each age group.

TABLE 3—Medical and Psychiatric Problems of 49 Homeless and 81 Housed Mothers

Problems Identified	Homeless		Housed	
	No.	(%)	No.	(%)
Medical Problems	13	(27)	17	(21)
Substance Abuse	8	(16)	5	(6)
Alcohol	6		4	
Drug	5		2	
Psychiatric Hospitalization or Diagnosis	13	(27)	8	(10)
Psychiatric hospitalization	4		3	
DSM-III, Axis I Diagnoses	11		5	
Schizophrenia	3		0	
Major affective disorder	1		2	
Substance abuse	4		1	
Mental retardation	3		2	

Overall, 14 per cent of the homeless reported no relationships and 30 per cent described two or more; in contrast, 5 per cent of the housed women had none and 64 per cent two or more. About two-thirds of the men with whom the homeless women had their most recent relationships had poor work histories, substance abuse problems, battering tendencies, or other problems, in contrast to one-third of the most recent boyfriends of the housed mothers.

Forty-one per cent of the homeless mothers willing to respond described a relationship in which they had been battered, compared with 20 per cent of the housed mothers. The homeless mothers tended to escape the relationship by going to battered women shelters, while most housed mothers turned to close friends for help.

Health/Mental Health Status—About one-fourth of the housed and homeless mothers reported medical problems (Table 3). A total of 16 (33 per cent) homeless and 10 (12 per cent) housed mothers had substance abuse or psychiatric problems: eight (16 per cent) homeless and five (6 per cent) housed mothers reported alcohol or drug problems; 13 (27 per cent) and eight (10 per cent), respectively, were judged to have psychiatric disability. With regard to the latter, four homeless and three housed mothers had been hospitalized for psychiatric reasons; after the interview, 11 homeless and five housed mothers were assigned DSM-III Axis I diagnoses indicating the presence of major psychiatric clinical syndromes. These diagnoses did not cluster into any one category in either group.

Seven homeless (14 per cent) and seven housed (9 per cent) mothers had been in jail.

Service Utilization—Overall, the homeless less frequently reported current involvement with a housing or human service agency (50 per cent vs 75 per cent). Smaller proportions of homeless mothers than housed mothers were receiving food stamps (55 per cent vs 83 per cent), WIC (Women, Infants, and Children Supplemental Food Program) (33 per cent vs 54 per cent), or housing subsidies (Section 8 or Certificate 707) (28 per cent vs 61 per cent).

The Children

General Characteristics—The mean age of the children, both the 86 homeless and 134 housed was 6.4 years. Slightly more than half of each sample were preschoolers, aged 5 years or less. Fifty-four per cent of the homeless children and 39 per cent of the housed children were male.

Three-fourths of the homeless mothers indicated that the child's father had no relationship at any time with the child or that the relationship had ended, compared with 44 per cent

of the housed mothers; fewer homeless than housed mothers (11 per cent vs 34 per cent) reported that the fathers took some financial responsibility for the child.

Thirteen (27 per cent) of the 48 homeless mothers willing to respond on this question were currently under investigation for neglect or abuse of their children compared to 12 (15 per cent) of 80 housed mothers.

Preschoolers—On the Denver Developmental Screening Test, 54 per cent of the 48 homeless preschoolers tested manifested at least one major developmental lag compared to 16 per cent of 75 housed preschoolers.

School-Age Children—On the Children's Depression Inventory, the mean total score of the 31 homeless children who completed the test was 10.3 compared to 8.3 for 33 housed children. A cutoff point of 9 indicates the need for psychiatric evaluation. On the Children's Manifest Anxiety Scale, 31 per cent of the 29 homeless children tested compared to 9 per cent of 34 housed children had a T-score of 60 or higher, indicating the need for psychiatric referral and evaluation. According to the mothers, 41 per cent of the homeless compared to 23 per cent of the housed children were currently failing or doing below average work in school.

Multivariate Analysis—To assess whether differences observed in the univariate analyses would persist when several factors were considered simultaneously, we carried out multiple logistic regression analyses. On univariate analysis, history of having been abused as a child or adult and history of substance abuse or psychiatric difficulties were positively correlated with homelessness (that is, more prevalent among homeless mothers.) Having grown up in a family on welfare and having three adult supports were inversely correlated with homelessness (that is, more prevalent among housed mothers). We included terms for these factors in the logistic regressions, and also included terms for the mother's age and race and for having grown up in the greater Boston area. All of the relationships observed on univariate analysis persisted in the multivariate analysis. When the analysis was repeated, this time comparing the homeless to those housed mothers who had shared apartments or had been homeless, the results were similar.

Discussion

The present study—the first systematic comparison of homeless and housed families—has several limitations that should be borne in mind when interpreting the results. The interview setting was different for the homeless and housed mothers, and this may have contributed to differences in reporting. The sample was small, multiple comparisons were made, and differences may have arisen by chance. There were problems reaching the target populations of both homeless and housed families. Not all shelters allowed access to their homeless clients. In addition, when they were full, the shelters tended to turn away problem families first; thus, the sample may underrepresent the most seriously troubled families. The housed families lived in dangerous crime-ridden areas. For safety reasons, attempts to contact them were made only during daylight hours, when many were not home. As a result, the sample of housed mothers probably overrepresents those who do not have jobs, and these women may have been more likely to be on welfare for long periods. If future studies are to overcome problems of selection of homeless and housed families, they will require a large investment of money, time, and personnel.

Nationwide most AFDC families stay on welfare for less than two years.¹⁷ Although only 30 per cent of Massachusetts

families remain on AFDC for more than two years, almost 70% of the housed families in the present study had received welfare for that long.¹⁸ Possibly the housed group was weighted with long-term welfare recipients because the sampling scheme required at least 10 eligible housed families to reside in a sampled block: this might have resulted in selection of women from housing projects, a group that tends to be on welfare for long periods. Although the sample may not be representative of all poor housed families, it does not appear to overrepresent those who are best off. Rather, it contains a higher proportion of those persistently poor families who have difficulty getting off welfare.

Comparisons of other features of the housed women with published data are problematic. For example, studies from the 1960s and 1970s indicate that families receiving AFDC tended to move repeatedly.^{19,20} In the present study, the housed mothers moved infrequently. We are not aware of any published data on the characteristics of long-term AFDC recipients. It is plausible, however, that the low frequency of moves by housed mothers in the present study is explained by the severity of the current housing crisis which has made it necessary for those in public housing and subsidized apartments to stay there.²¹ As another example, recent data indicate that in Massachusetts some 70 per cent of AFDC families must find housing in the private housing market.²² In the present study, half of the housed families lived in housing projects. As noted, whether this is so for long-term AFDC recipients is not known.

The comparison of homeless and housed mothers revealed some important similarities and striking differences:

- In both groups the mothers were poor, currently single, had little work experience, and had been on welfare for long periods.
 - Many of their children had serious developmental and emotional problems.
 - A greater proportion of homeless than housed mothers had been born into female-headed families, but by adolescence the proportions were similar.
 - A smaller proportion of homeless mothers had been on welfare as children and a greater proportion had had contact with their fathers.
 - Similar proportions of homeless and housed mothers had suffered major family disruptions during childhood.
 - The homeless mothers had much more frequently been abused as children, and also had been more frequently battered as adults.
 - The support networks of the homeless women were fragmented and included proportionately more men, while the housed mothers had frequent contact with their mothers, other female relatives, and extended family living nearby.
 - A greater proportion of homeless than housed mothers had substance abuse or psychiatric problems.
 - Despite the scarcity of low-income housing and of housing subsidies, as well as long waiting lists for public housing in Boston,²² most housed families were living or had lived in public housing or in private subsidized housing while almost none of the homeless had managed this.
 - Few housed mothers had histories of homelessness. By contrast, the homeless families moved often and two-thirds had previously resided in shelters or welfare hotels.
- What differences might explain why the housed mothers were able to find and retain housing while the homeless were not? Although luck may contribute to a poor family's ability to find secure housing, the nature and extent of a family's support network play an important role in determining

whether it will need emergency shelter. It has been reported that poor families headed by women tend to have interconnected kin and non-kin domestic networks comprised predominantly of women.^{19,20} With the current housing crisis, it is difficult to imagine how poor families can survive in the community unless they have supports to act as a safety net during stressful times. For example, a recently evicted poor mother will generally have the opportunity to double up if she has a large extended family living nearby or if she has many close friends. In the present study, the housed families had such supports. The homeless mothers did not, but we cannot exclude the possibility that homelessness stressed and weakened their support networks.

What accounts for the fragmented supports of the homeless women? Certain aspects of the mothers' childhoods are unlikely explanations: although more housed than homeless mothers were born into female-headed families, by adolescence two-thirds of the families of both groups were female-headed; major family disruptions during childhood affected similar proportions, more than half, in each group and at similar ages. In some ways the homeless mothers had backgrounds that might be considered more favorable than those of the housed: during childhood their fathers had more contact with them and their families were less frequently on welfare. However, the homeless mothers experienced more family violence than the housed. In particular, 42 per cent of homeless mothers willing to respond reported having been abused as children. This pattern of violence continued into adult life: about the same proportion of homeless mothers reported having been abused by their boyfriends or husbands. More homeless than housed mothers were also being investigated for abuse or neglect of their own children. The greater frequency of family violence suffered by the homeless mothers may explain, in part, their difficulty as adults in forming and maintaining adequate supportive relationships.

The presence of chronic mental illness has been invoked to explain homelessness.^{23,24} In the present study, serious psychopathology may have affected the ability of homeless women to find and retain housing or to maintain the support networks that would assist them. Psychiatric disability can explain only a small part of family homelessness in this study, however, since it affects only a minority of the homeless women. There might even have been an overestimation of the proportion with severe psychopathology since the investigator who made the psychiatric diagnoses was not blind to whether the mother was homeless or housed.

Although chronic mental illness was absent in a majority of the homeless mothers, this is not to say that they and their families did not have significant emotional difficulties. In several respects—such as difficulties in relationships with family, family violence, the severity of the problems of the children, and use of services and agencies—they are similar to the "multi-problem" families first described several decades ago.^{9,25,26}

It has been further suggested that homeless families are part of a "culture of poverty", with the implication that the economic and social problems of these families will persist and become intergenerational.^{27,28} To the contrary, in the present study the homeless were less likely to have grown up on welfare than the housed mothers, and the latter were the ones who were knowledgeable enough to maintain housing for themselves and their families and to obtain other benefits, such as food stamps. Furthermore, the types of emotional difficulties which affected the homeless mothers may well be

amenable to intervention (e.g., supportive environments such as transitional housing).²⁹

The present findings must be considered in the context of the current housing crisis.³⁰ In Massachusetts and other areas of the country, the supply of low income housing has been greatly reduced while rents have skyrocketed. Given these circumstances, the additional problems faced by homeless mothers of small children make even more difficult the already daunting task of finding and keeping a place to live that is affordable on current AFDC benefits. Any solution to this problem requires a commitment to increasing the supply of decent, affordable housing and providing adequate income maintenance. However, without practical help from social welfare agencies that is focused on rebuilding supportive relationships, the quality of life will continue to be severely compromised.

ACKNOWLEDGMENTS

Supported by the Robert Wood Johnson Foundation, Boston Safe Deposit and Trust Company, Godfrey B. Hyams Trust, and the Boston Foundation.

We would like to thank Lenore Rubin, PhD, and Alison Lauriat, MA, for their help with the data collection, and Russell Schutt, PhD, for help with the study design.

REFERENCES

1. US Conference of Mayors: A Status Report on Homeless Families in America's Cities: A 29-City Survey. Washington DC: The Conference, May 1987.
2. Bassuk EL: The homelessness problem. *Sci Am* 1984; 251:40-45.
3. Acker PJ, Fierman AH, Dreyer BP: An assessment of parameters of health care and nutrition in homeless children. *Am J Dis Childr* 1987; 141:388.
4. Wright J: Effects of homelessness on the physical well-being of children, families, and youth. National evaluation of the Johnson-Pew "Health Care of the Homeless" Program, Feb. 24, 1987.
5. Chavkin W, Kristal A, Seabron C, Guigli P: The reproductive experience of women living in hotels for the homeless in New York City. *NY State J Med* 1987; 87:10-13.
6. Columbia University: Homeless families living in hotels: The provision of publicly supported emergency temporary housing services. Prepared for the Human Resources Administration, City of New York, May 1985.
7. Bassuk EL, Rubin L, Lauriat A: Characteristics of sheltered homeless families. *Am J Public Health* 1986; 76:1097-1101.
8. Bassuk EL, Rubin L: Homeless children: A neglected population. *Am J Orthopsychiatry* 1987; 57:279-286.
9. Kronenfeld D, Phillips M, Middleton-Jeter V: The Forgotten Ones: Treatment of Single Parent Multi-Problem Families in a Residential Setting. Washington DC: US Dept Health and Human Services, Grant Number 18-P-90705/03, 1978-1980.
10. Flaherty J, Gaviria FM, Pathak D: The measurement of social support. The social support network inventory. *Compr Psychiatry* 1983; 24:521-529.
11. Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition-Revised (DSM-III-R). Washington DC: American Psychiatric Association, 1987.
12. Frankenburg WK, Goldstein A, Camp B: The revised Denver Developmental Screening Test. Its accuracy as a screening instrument. *J Pediatr* 1971; 79:988-955.
13. Frankenburg WK, Fandal AW, Thornton SM: Revision of Denver Prescreening Developmental Questionnaire. *J Pediatr* 1987; 110:653-657.
14. Kovacs M: The Children's Depression Inventory. A self-rated depression scale for school-aged youngsters. Pittsburgh: University of Pittsburgh School of Medicine, April 1983.
15. Reynolds CR, Richmond BO: Revised Children's Manifest Anxiety Scale Manual. Los Angeles: Western Psychological Services, 1985.
16. Armitage P: Statistical Methods in Medical Research. New York: John Wiley, 1971.
17. Bane MJ, Ellwood D: The Dynamics of Dependence: The Routes to Self-Sufficiency. Washington DC: US Dept of Health and Human Services, June 1983 (Contract No. HHS-100-82-0038).
18. The Facts about Welfare: Being Poor in Massachusetts. Boston: Department of Public Welfare, 1985.
19. Stack CB: All Our Kin: Strategies for Survival in a Black Community. New York: Harper & Row, 1974.
20. Sussler I: Norman Street. New York: Oxford University Press, 1982.
21. Dumpson JR: A Shelter Is Not a Home: Report of the Manhattan Borough President's Task Force on Housing for Homeless Families. March 1987.

22. Gallagher E: No Place Like Home: A Report on the Tragedy of Homeless Children and Their Families in Massachusetts. Boston: Massachusetts Committee for Children and Youth, 1986.
23. Arce A, Vergare M: Identifying and characterizing the mentally ill among the homeless. *In: Lamb HR (ed): The Homeless Mentally Ill.* Washington DC: American Psychiatric Association, 1984; 75-89.
24. Snow D, Baker S, Anderson L, Martin M: The myth of pervasive mental illness among the homeless. *Soc Problems* 1986; 33:407-423.
25. Pavenstedt E (ed): *The Drifters: Children of Disorganized Lower Class Families.* Boston: Little Brown & Co, 1967.
26. Geismer L, LaSorte M: *Understanding the Multi-Problem Family.* New York: Associated Press, 1964.
27. Lewis O: *The Children of Sanchez.* New York: Random House, 1961.
28. Banfield E: *The Unheavenly City: The Nature and Future of Our Urban Crisis.* Boston: Little Brown, 1968.
29. Wilson J: *The Truly Disadvantaged: The Inner City, the Underclass and Public Policy.* Chicago: Univ of Chicago Press, 1987.
30. Hartman C: The housing part of the homelessness problem. *In: Bassuk EL (ed): The Mental Health Needs of Homeless Persons. New Directions for Mental Health Services.* San Francisco: Jossey-Bass, 1986; Vol 30.

New Non-Invasive Probe Predicts if Graft Is Needed in Burn Patients

Researchers at the University of California, Irvine Medical Center have demonstrated that a technique called laser Doppler can predict with better than 90 per cent accuracy which burns should receive skin grafts and which should be allowed to heal on their own.

Experienced burn doctors and nurses can predict accurately only about 60 per cent of the time whether a burn will heal, said associate professor of surgery Dr. Kenneth Waxman, who began pioneering the technique four years ago.

Using the new technique, UCIMC burn specialists base their prognosis of a burn's healing on the speed of blood flowing through the burn, as determined by Doppler shifting of laser light. One can experience the Doppler shifting of sound by standing beside a highway and listening to the change in frequency as a car passes. Sound waves from an approaching car are "squeezed" to produce a higher frequency sound while those from a departing car are "stretched" and sound lower. The same phenomenon occurs with light. The speed of blood cells flowing through a burn is measured by the frequency of reflected laser light returning to the probe's photodetectors.

By carefully observing the progress of more than 50 burns, Waxman and his co-researchers have been able to refine the predictive accuracy of the laser device. If the non-invasive probe predicts a graft is needed, the patient is spared about three weeks of useless treatment; a prediction that a burn will heal avoids unnecessary surgery. "Either way, it saves costs and a lot of suffering," said Waxman.

Since the laser Doppler was first tried in the United States at UCIMC, approximately a dozen other hospitals have acquired the devices for their burn units. Collaborating on the study with Waxman were Dr. Bruce Achauer, associate adjunct professor of surgery, and Nancy Lefcourt, UCIMC Burn Unit nursing specialist.