

### Health Profiles of Early Adolescent Delinquents

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#### SYNOPSIS .....

*Comparison of the health status of 53 delinquent and 51 nondelinquent boys revealed that 57 per-*

*cent of the delinquents, as compared with 20 percent of the nondelinquents, had experienced two or more serious adverse health events (such as hospitalization, loss of consciousness, or an automobile accident). Physical examinations revealed many more conditions requiring intervention in the delinquent than in the nondelinquent boys.*

*Major differences in the two groups' use of health care were apparent: 34 percent of the delinquents either had no medical care or had used only the emergency room, as contrasted with only 8 percent of the nondelinquents. An overall health index that was used to compare the two groups remained statistically significant for a subset of 16 pairs matched on socioeconomic indicators.*

*These results do not imply an etiological link between health status and delinquency, but they do suggest a strong de facto link. The recurrent hospitalizations of the delinquent boys, their substantial use of medications, and their episodic use of health care underscore the importance of an awareness on the part of public health personnel of this group's medical status and of the urgent need for adequately planning the health care of all youngsters in the juvenile justice system.*

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**I**N CLINICAL STUDIES OF JUVENILE DELINQUENCY, a recurring epidemiologic theme is that youngsters in trouble with the law have a greater than average number of health problems. Clearly this observation has major implications for health service providers and points up the need for understanding not only the range of health problems in young delinquent populations but also the young delinquents' own medical concerns and health preoccupations. The study described here was undertaken to determine the health profiles of a group of delinquent boys and to document their knowledge and concerns regarding their health status.

#### Background

The literature on health and delinquency research is rich and varied. Some investigators have sought relationships between specific medical conditions and

specific behaviors (1-7). Others have evaluated the complex relationship between health and developmental and social factors (8-19). Still others have studied the provision of health services for young people in trouble (20-26).

In studies designed to assess specific medical conditions, evidence is fairly strong that a number of rare conditions may cause or exacerbate deviant behavior; these include chromosomal abnormalities such as Klinefelter's syndrome (1,2), the XYY syndrome (3,4), and frontal and temporal lobe epilepsy (5-7). Although these conditions account for only a small proportion of delinquent cases and therefore do not allow the definition of a clear-cut association between health status and delinquency, the existence of an organic base for some aberrant behavior has led investigators to seek other relationships. As a result, researchers have conducted a variety of studies in which they have examined perinatal events,

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medical and neurological illness, trauma, accidents, hospitalizations, medications, and illicit drug or alcohol use in the hope of finding some relationship between these factors and delinquency for at least a subgroup of delinquent youths. In 1975, Scott (27) reviewed many of these studies and concluded that no single proposed relationship was clearly established, but that the frequent association of poor health and delinquency was valid and justified further exploration.

Recent investigations have continued to unfold the complex association between health parameters and deviant behavior. Lewis and coworkers (8) have studied the perinatal histories of incarcerated youth. Using hospital chart reviews, these authors have demonstrated a high incidence of perinatal difficulties in this group and have postulated that early neurological trauma predisposes some youngsters to the double indemnity of an at-risk physical status in an at-risk environment. Offord (9) has recently shown an increased rate of perinatal complications and low birth weight in a subgroup of hyperactive delinquents. These studies contradict the earlier results of McCord and McCord (10) and Fairweather (11), which showed no relationship between perinatal events and later delinquency.

Another theme running through studies of the medical correlates of delinquency is the high rate of accidents and early hospitalizations among youngsters who subsequently become delinquent. In a study of English delinquents, Quinton and Rutter (12) found a strikingly higher rate of hospitalization before age 5 in a group of delinquents than in a control group. Barnes (13) found a similar phenomenon in Ireland. Lewis and coworkers (14) have also

shown a high rate of head trauma and consequent hospitalizations among the violent juvenile delinquents they studied.

Another group of investigators has tried to unravel the multivariate relationship of delinquency, poverty, poor health, and poor health care. In the early 1960s, Deisher and O'Leary (15) examined the pattern of health care utilization of the families of juvenile offenders. Although they found that these parents perceived a high rate of problems in the young offenders (approximately 20 percent organic and 30 percent emotional), they also found that less than half of the parents brought these problems to the attention of a physician or other health care provider. Other authors have pointed to dental caries and short stature (17) as signs of ill health and probable deprivation among delinquents. In addition, the finding of previously undiagnosed and untreated conditions such as inguinal hernias and heart murmurs among detainees has been interpreted to mean poor early health supervision (18).

Some investigators have sought to determine the availability of comprehensive services to address the medical needs of adolescents once they have entered the juvenile justice system (19-21). Their studies indicate that although problems of access to health care and followup may be profound before youngsters enter the correctional system, these problems are often much worse after entry (22,23).

Finally, it is well established that the delinquent's lifestyle itself causes many health problems. Litt and Cohen (21) documented the epidemic increase in hepatitis and blood infections during the drug abuse era of the late sixties. Other authors have explored the direct relationship between drug abuse and anti-social behavior (24). Carper (25) has pointed to the risk-taking behavior of delinquents as well as to their lack of impulse-control. Hein and coworkers (26) have shown an increased prevalence of gonococcal infection among delinquents. In a sense, these studies indicate that delinquency can serve as one path to the illness of adolescents, and thus they underscore the importance of health-screening of this population.

The current study was initiated to try to establish an overall health status rating for young adolescents recognized as delinquent. It was undertaken as part of a large collaborative effort by the Massachusetts Division of Youth Services and the Community Service Programs of the Children's Hospital of Boston to investigate the health and neurodevelopmental factors associated with delinquent behavior in early adolescence. The report presented here deals exclusively with medical factors. Two companion

reports address the educational and neurodevelopmental results of this collaborative effort (28,29).

## Methods

Over a 1-year period, July 1979 through July 1980, a group of 53 boys was drawn sequentially from white, English-speaking males between the ages of 13 and 16 who had been newly committed to the Massachusetts Department of Youth Services. The 53 all resided in three of the seven regions served by the Massachusetts Department of Youth Services, the State agency responsible for the care and rehabilitation of juvenile offenders. A comparison population of 51 white, English-speaking boys was drawn from the public junior high schools of Watertown, Mass., a community whose demographic characteristics were typical of the towns in which the boys who had recently been committed lived. A random numbers table was used to draw names of male students from the enrollment lists of the Watertown junior high schools. The parents of boys whose names were drawn were sent letters inviting them to participate in the study, and about one-third of those invited agreed to participate. None of the boys in the comparison group was currently, or ever had been, committed to the Department of Youth Services.

Both groups of boys were assessed by means of a physical examination, a neurodevelopmental examination, educational testing, and several health-related questionnaires. The delinquents' parents were interviewed in their homes. The parents of the non-delinquents were sent a questionnaire that included questions similar to those used in the interviews with the delinquents' parents. Informed consent detailing the examinations, questionnaires, and interviews was obtained from the participants of both groups.

For the analysis, a health profile was designed for each youngster, which consisted of four components, namely, adolescent health concerns, past medical history, physical examination results, and the source of health care. The criteria used for scoring each of these areas are described in table 1.

The adolescent health concerns rating came from a self-administered questionnaire in which the boys were asked to assess their own health status and indicate whether they had concerns in any area. The questionnaire was written at a 6th-grade reading level. A physician was available to read the questions to any boys who said they were having difficulty understanding the questions. The questionnaire consisted of a standard review of systems, including 27 questions about the boy's general health, height,

Table 1. Percentage distribution of the scores in four health areas of the delinquent group and the comparison group

| Scores for 4 health areas with their meanings <sup>1</sup> | Delinquent group (N = 53) | Comparison group (N = 51) |
|------------------------------------------------------------|---------------------------|---------------------------|
| Adolescent concerns: <sup>2</sup>                          |                           |                           |
| 0 = none . . . . .                                         | 11                        | 18                        |
| 1 = 1 to 3 . . . . .                                       | 45                        | 55                        |
| 2 = more than 3 . . . . .                                  | 43                        | 28                        |
| Past medical history: <sup>3</sup>                         |                           |                           |
| 0 = none . . . . .                                         | 15                        | 43                        |
| 1 = concerns in 1 area . . . . .                           | 28                        | 38                        |
| 2 = concerns in more than 1 area . . . . .                 | 57                        | 20                        |
| Physical examination findings: <sup>3</sup>                |                           |                           |
| 0 = none . . . . .                                         | 54                        | 84                        |
| 1 = of definite severity in 1 area . . . . .               | 36                        | 16                        |
| 2 = of definite severity in more than 1 area . . . . .     | 10                        | 0                         |
| Health care source: <sup>3</sup>                           |                           |                           |
| 0 = continuous care . . . . .                              | 66                        | 92                        |
| 1 = episodic care or no care                               | 34                        | 8                         |

<sup>1</sup> The lower the score, the more favorable is the health rating; thus, zero is the best rating.

<sup>2</sup> Not significant.

<sup>3</sup>  $\chi^2 = P \leq 0.01$ .

NOTE: Percentages for a health area may not add to 100 because of rounding.

## Typical items from questionnaire on adolescent health concerns

Do you feel you are the right weight?

1. About right
2. Too skinny
3. Too fat

Do you think something is wrong with your health?

1. Yes
2. No
3. Don't know

Do you have toothaches?

1. Yes
2. No
3. Don't know

Do you often have stomach aches?

1. Yes
2. No
3. Don't know

Is there any chance you now have V.D.?

1. Yes
2. No
3. Don't know

Do you ever feel clumsy or uncoordinated?

1. Yes
2. No
3. Don't know

Do you have concerns about your health that we haven't talked about?

1. Yes
2. No
- What? \_\_\_\_\_

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Table 2. Percentage distribution of pertinent health history findings in the delinquent group and the comparison group

| Condition                                                    | Delinquent group<br>(N = 47-53) | Comparison group<br>(N = 49-51) |
|--------------------------------------------------------------|---------------------------------|---------------------------------|
| <b>Perinatal history</b>                                     |                                 |                                 |
| Excess weight gain in pregnancy (more than 35 lbs) . . . . . | 38                              | 4                               |
| Mother injured prepartum . . . . .                           | 8                               | 2                               |
| Difficult delivery . . . . .                                 | 25                              | 8                               |
| Birth injury . . . . .                                       | 10                              | 4                               |
| Low birth weight (less than 5 lbs) . . . . .                 | 4                               | 8                               |
| Prematurity (less than 38 weeks) . . . . .                   | 8                               | 6                               |
| <b>Systems review</b>                                        |                                 |                                 |
| Frequent otitis before age 3 . . . . .                       | 17                              | 0                               |
| Occasional otitis before age 3 . . . . .                     | 6                               | 12                              |
| Frequent otitis after age 3 . . . . .                        | 17                              | 2                               |
| Problems with hearing at some time . . . . .                 | 21                              | 10                              |
| Problems with vision at some time . . . . .                  | 23                              | 22                              |
| Recurrent headaches . . . . .                                | 8                               | 8                               |
| Poor weight gain . . . . .                                   | 11                              | 10                              |
| Asthma or breathing problems . . . . .                       | 32                              | 16                              |
| Anemia . . . . .                                             | 15                              | 2                               |
| More than 3 hospitalizations . . . . .                       | 15                              | 2                               |
| <b>Serious accidents</b>                                     |                                 |                                 |
| Serious accident . . . . .                                   | 38                              | 12                              |
| Hit by a car . . . . .                                       | 17                              | 10                              |
| In an auto accident . . . . .                                | 11                              | 6                               |
| Injured in a fight . . . . .                                 | 19                              | 4                               |
| Fracture . . . . .                                           | 44                              | 28                              |
| Hospitalized for head injury . . . . .                       | 40                              | 8                               |
| Burn . . . . .                                               | 13                              | 4                               |
| <b>Neurological symptoms</b>                                 |                                 |                                 |
| Loss of consciousness (passed out) . . . . .                 | 26                              | 2                               |
| Seizures ("fits") . . . . .                                  | 8                               | 0                               |

NOTE: All findings in the table are based on reports by the parents.

weight, self-image, and concerns about hearing, vision, and each organ system (page 451). A final question allowed boys to express concerns not in the general review. About one-fourth of the questions were adapted from Hammer (30).

The boy's past medical history rating was derived from the parents' questionnaire, which included questions about the mother's pregnancy, the perinatal course, and early medical events in the boy's life, such as hospitalization, accidents, medications for chronic conditions, and persistent symptoms. Four areas of concern were identified, namely, perinatal, systems review, serious accidents, and serious neurological symptoms.

The physical examination of the boys was performed by one of two pediatric fellows who had trained with each other in order to establish consistency in their observations. Each of these physicians saw equal numbers of delinquent and comparison boys. The physical examination rating was based on findings of "definite severity" (findings that required ongoing medical supervision or intervention). Such findings included over- and under-nutrition, unhealthy appearance, perforated or chronically draining ears, hearing loss, orthopedic problems, and significant dental caries. For the analysis, the results of the physical examination were divided into four groups (general, orthopedic, dental, and sensory).

The rating for source of health care was based on answers to questions posed to the boys. These questions were designed to determine which boys had a continuous source of care and which boys depended on sporadic or emergency room care only.

An overall health score was arrived at by adding the scores on each of the four separate ratings. This overall score allowed for the analysis of multiple health concerns.

## Results

Table 1 shows the composite ratings for each of the four health areas for the delinquent and the comparison boys. There were statistically significant differences between the two groups in each of the four health areas except adolescent concerns.

The high prevalence of adolescent concerns documented for both groups is of interest. Each group showed high levels of preoccupation with health; 28 percent of the comparison group and 43 percent of the delinquent group expressed more than three concerns about their health. The delinquent boys expressed more concerns about toothaches, headaches,

and urinary incontinence than did the comparison boys. The delinquent groups also claimed more episodes of blacking out and fainting. None of the delinquent boys expressed concerns about poor bowel control; two of the comparison boys did. Almost 20 percent of the delinquent group had "other health concerns" not addressed by the questionnaire, as opposed to only 2 percent of the comparison group. Concerns were expressed about being crazy, going deaf, bruising easily, and the possibility of lung cancer due to a 6-year heavy smoking history. Thus, answers on the self-assessment questionnaire indicated a great deal of awareness about health and a preoccupation with health status by both groups.

Significant differences emerged in respect to past medical history: 83 percent of the delinquents' parents reported past medical concerns about their sons in at least one area compared with 58 percent of the nondelinquents' parents, and 57 percent of the delinquents' parents reported such concerns in two or more areas, as compared with 20 percent of the other parent group (table 1).

Table 2 shows the actual adverse health events that the questionnaires elicited. Several themes emerge from the boys' past medical history. First, although the overall percentages for adverse perinatal events were the same for the delinquent and the comparison boys, some particular adverse events were reported much more frequently by the delinquents' parents. These included excess weight gain by the mother (reported by 38 percent of the parents of delinquents compared with 4 percent of the other group) and difficult delivery (reported by 25 percent of the parents of delinquents compared with 8 percent of the other group). The parents of the delinquents also reported significantly more accidents and hospitalizations of their sons than parents in the comparison group. Eighteen of the hospitalizations reported for the delinquent boys were for head trauma in contrast to only two admissions for this condition for the other group.

The physical examination findings for the two groups differed substantially, with 10 percent of the delinquent group, but none of the comparison group, manifesting conditions of definite severity in two or more areas. The specific physical findings are listed in table 3. Few of the adverse findings for the delinquent group are in themselves critical or debilitating, but in the aggregate their number is striking.

Finally, the data on the sources of health care suggest real differences between the two groups, with the delinquent boys having a much higher rate of episodic care (34 percent) than the other group (8

Table 3. Percentage distribution of adverse findings upon physical examination in the delinquent group and the comparison group

| Findings                            | Delinquent group<br>(N = 54) <sup>1</sup> | Comparison group<br>(N = 49) <sup>2</sup> |
|-------------------------------------|-------------------------------------------|-------------------------------------------|
| General physical (any) <sup>3</sup> | 15                                        | 14                                        |
| Malnourished                        | 0                                         | 4                                         |
| Unhealthy appearance                | 7                                         | 0                                         |
| Immature appearance                 | 2                                         | 2                                         |
| Inappropriate girth                 | 6                                         | 13                                        |
| Scarred or inflamed                 |                                           |                                           |
| tympanic membranes                  | 4                                         | 0                                         |
| Nasal problem                       | 2                                         | 0                                         |
| Neck mass                           | 2                                         | 0                                         |
| Lymphadenopathy                     | 2                                         | 0                                         |
| Orthopedic (any) <sup>4</sup>       | 4                                         | 0                                         |
| Vertebral column abnormality        | 2                                         | 0                                         |
| Knee problem                        | 2                                         | 0                                         |
| Dental (any)                        | 24                                        | 2                                         |
| Tooth structure                     | 6                                         | 0                                         |
| Tooth decay                         | 18                                        | 2                                         |
| Tooth care                          | 9                                         | 0                                         |
| Sensory (any) <sup>5</sup>          | 13                                        | 0                                         |
| Visual acuity                       | 6                                         | 0                                         |
| Auditory acuity                     | 7                                         | 0                                         |

<sup>1</sup> Physical examination findings were available on one boy for whom the other assessments were not completed.

<sup>2</sup> Two boys did not have physical examinations.

<sup>3</sup> There were no findings of poor posture, abnormal optic fundi, buccal abnormalities, pharyngeal problems, thyroid enlargement, abnormal chest appearance, abnormal heart rate or rhythm, abnormal abdominal appearance or abnormal abdominal palpation, hernia, or genital abnormality in either group.

<sup>4</sup> There were no findings of foot or joint problems, upper limb abnormalities, or gait problems in either group.

<sup>5</sup> There were no findings of problems with vision in respect to color in either group.

percent). Among the 24 delinquent boys with definite adverse physical findings, 11 reported either episodic health care or no health care. In contrast, all eight of the boys in the comparison group who had adverse physical findings reportedly participated actively in primary care. These results suggest that substantial unmet needs may exist in the young delinquent population.

There were overall differences in the health profiles of the 53 delinquent boys and the 51 comparison boys. The mean overall health score for the delinquents was 3.62 (standard deviation 1.58) and for the comparison boys, 2.09 (standard deviation 1.89). The *t*-test for this difference was significant at  $P \leq 0.001$ .

Background data were available on both groups regarding parents' ages, education, and occupation (28). The two groups of families differed markedly in the degree of intactness; the delinquents came from very unstable families (73 percent with

original family not intact) as contrasted with the nondelinquent boys (only 26 percent with original family not intact). In addition, the distribution of parental education and occupations was skewed toward lower educational achievement and less skilled occupations for the parents of the delinquents and toward higher educational attainment and more skilled jobs for the parents of the nondelinquents.

In order to control (at least partially) for socioeconomic factors, the data were searched for matching pairs of delinquents and nondelinquents. It was possible to accomplish matching on 16 pairs of boys. The paired factors were mother's education and occupation and father's education and occupation. In general, the 16 delinquents were of the highest socioeconomic status of their group, and the 16 comparison boys were of the lowest socioeconomic status of their group. With this matching, the mean overall health score for the delinquents remained high at 3.56 (standard deviation 1.62) and compared with a low figure of 1.88 (standard deviation 1.31) for the nondelinquents. The Student's *t*-test for this difference was significant at  $P \leq 0.003$ .

## Discussion

The results of this study are in many ways consistent with those of other investigations. High vulnerability (particularly to events affecting the central nervous system) runs through the histories of the 53 delinquent boys studied. Eighteen hospital admissions for concussion were documented for them, as compared with two such admissions in the comparison group. Three of the delinquent boys were admitted to a hospital for drug overdoses; two of these boys were unconscious when admitted. Two of the delinquents had been hospitalized for evaluation of seizures or passing out. Finally, two of the delinquent boys had been admitted to a hospital for the kind of infections that can result in central nervous system sequelae (namely, pertussis and measles).

In the delinquent boys studied, perinatal events did not seem to play as significant a role as in Lewis' studies (14). The overall perinatal health score was the same for both the study and comparison groups. There were, however, substantial differences in the rates of difficult delivery and of excess weight gain during pregnancy that the mothers of the two groups of boys reported. Difficult delivery has been one of the major determinants of the long-term health and functional outcome for children in the large-scale study in Great Britain "From Birth to Seven" (31). In studies of learning-disabled children, the propor-

tion of their mothers who experienced excess weight gain during pregnancy has been shown to be higher than the proportion of mothers in a community control group (32). In the current study, there was no difference in the types of crimes committed by the boys whose mothers had excess weight gain during pregnancy, but they tended to be involved earlier in criminal activities than the other delinquent boys.

Perhaps the most unexpected finding was the high incidence of ear infections and of failures in hearing screenings. Although several investigators have implicated ear infections in language impairment, in this study no relationship could be demonstrated between early otitis media and language disability in the delinquent group, although the relationship was suggested for the comparison group. The presence of old ear scars and mild hearing problems may reflect poor use of health care services, but clearly more investigation is needed to explain the high rate of early otitis media.

Do the results of this study signify that there are true aggregate differences in the health profiles or health status of delinquent and nondelinquent youngsters? Are the delinquent youngsters, in fact, less healthy or at greater health risk than other youngsters their age? The question is difficult, because it necessitates a definition of health status. According to one definition, health might depend on the presence or absence of specific medical diagnoses such as diabetes or a seizure disorder. In fact, however, few boys in either group studied had a definite clinical disease. One delinquent boy had a mitral valve lesion, another was deaf in one ear as a result of head trauma, and a third had a history of hypercholesterolemia. A number had asthma and recurrent ear disease. In the comparison group, one boy had hypoglycemia, and another had Legg-Calves-Perthes syndrome. If, however, the definition of health status were to be confined to specific diagnostic categories, then recurrent infections and short-term hospitalizations would be obscured or neglected altogether. Because factors of this kind have been considered important in previous studies of health and delinquency, it was decided that the definition of health status for the current study should be broad enough to encompass past historical events and present health concerns, present physical findings, and current health care arrangements.

The relative weighting of these factors again presents a challenge. Should a perinatal event such as toxemia receive the same weight as whooping cough or a concussion? How should a youngster's concerns about his heart be compared with the actual

finding of a heart murmur? Does diastolic blood pressure elevation deserve more weight than carious teeth? For this analysis, a pragmatic approach was taken in defining the four areas of concern. First, the events within each area were weighed equally, and then the distribution of the findings was examined in order to establish deviant ratings. In all cases, a zero meant no finding. The difficult decisions came in distinguishing between the moderate 1 and the significant 2. Although alterations in the scoring might alter the total ratings obtained, the relative ratings of the two groups would be unlikely to change substantially.

The final issue in defining health status is the independence or dependence of health on other factors such as socioeconomic status, environmental determinants, and critical events in the life of a child. This issue is particularly relevant in a study of juvenile delinquents for whom every problem is magnified and exacerbated by the other problems the youngster faces. How much of a young boy's poor health status can be attributed to poor nutrition, inadequate perinatal care, a nonsupportive environment, the lack of preventive care, and so forth? Pasamanick and Lilienfield (33) introduced the notion that increased birth difficulties were associated with poverty. Sameroff (34) took up this notion and postulated a continuing set of problems after birth in which at-risk infants failed to receive the extra nurturance that their conditions dictated. The families of juvenile delinquents are, by and large, problem families. Several of the fathers of the delinquents in the current study were in jail, and the whereabouts of 19 percent of the fathers were unknown. Furthermore, the delinquent boys had undergone serious stress in many instances. A review of their charts to identify critical events (such as the death of a close relative, a fire, witnessing or experiencing violence) revealed only three delinquent boys who had not experienced one or more of such critical events.

The intertangling of poor health, delinquency, and low social status presents two major problems for the investigator. First, it is extremely difficult to obtain a suitable group for comparison. Short of nondelinquent siblings (who may be difficult to find), few other youngsters will have experienced as much in their lives as the delinquents. The events that comprise the fabric of the delinquent's background are often violent and tragic. It is possible to match for parental occupation and education, but it becomes extremely difficult to match for family chaos, violence, alcoholism, parental absence, and parental attitude.

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The second problem is that the data collected are extremely difficult to interpret. To what extent are both health events and delinquency consequences of the same underlying pathology, namely, poverty and disadvantage? To what extent does poor health contribute to delinquency and vice versa? Clearly, there are major constraints in examining the health status of delinquents, and any interpretation of data must be tempered by acknowledgement of them. Nonetheless, results of this study point out serious health care needs among juvenile delinquents. Continued analysis may begin to unravel new relationships between poor health and delinquency and lead to other avenues of exploration.

## Implications

It is intriguing to ask why so many investigators in sociology and medicine have felt compelled to look for a link between juvenile delinquency and poor health. Undoubtedly, a major reason for the search for a link is the hope that something preventable or curable will be found. If only the temper outbursts were temporal lobe epilepsy, we could give an anti-convulsant. If only we could find a learning disability, we could treat it and avoid years of dysfunction. However, this search has been relatively nonproductive thus far. Another explanation—suggested by the current study and other studies—is that a de facto link does exist between juvenile delinquency and poor health, and that this link presents major challenges and difficulties for the health professionals who must deal effectively with it day by day.

Supporting a de facto link is the fact that in the year before the current assessment, 30 percent of the delinquent boys in the study had been hospitalized. This proportion compares strikingly with the 7.2 percent figure in the recent report of the National Center for Health Statistics for yearly hospitalization



of children in poverty and with the 9.8 percent rate for the comparison group (35). Further support comes from the fact that 10 of the 53 delinquent boys had experienced head trauma serious enough to necessitate hospital admission, and that the vast majority had seen a social worker or psychiatrist for counseling. These findings underscore one major factor in delinquency: delinquent youngsters are patients. They arrive in emergency rooms and turn up on hospital wards. They are represented disproportionately in walk-in clinics and in programs for adolescents with learning disabilities. Their health problems fit a characteristic pattern or constellation that challenges medical care providers to offer a comprehensive array of services. In a way, health professionals know, as they sew up a superficial wound, soak a burn, or arrange for discharge of a juvenile delinquent, that they are not really treating the basic problem, or even the patient. In some sense, delinquent youngsters constitute a population that is both tragically underserved and overserved. Its members appear frequently in physicians' offices, emergency rooms, and free clinics; yet their problems are not understood or addressed. The reason is partially that the problems are so complex and the solutions so few. In fact, delinquency can be conceived of as the endstage of developmental and behavioral dysfunction. Such a conception allows guarded expectations for the efficacy of intervention but also raises the stakes for health care providers.

Each year an estimated 1 million youngsters under the age of 18 appear before juvenile court judges (36). A large number have health-related problems and have come to physicians and other health professionals for help. Clearly, if health professionals are to make any impact on the lives of these pre-delinquent and delinquent youngsters, the scope of public health must be broadened and the at-risk pattern that is suggested in this study and other studies (18,19) must be recognized.

Health professionals need to be aware that multiple admissions for trauma in an older child may be as significant as they are for a younger one. At the very least, a good history of school and out-of-school activities should be elicited. In cases with seemingly unusual aspects, a home visit should be incorporated into the workup. Further investigation is also indicated when clear-cut neglect of the child's health is identified.

Although an increased awareness of the common health patterns among young delinquents is unlikely in and of itself to break their downward cycle, the high rate of medical problems among delinquents

underscores the need for constructive health planning for youngsters committed to State authorities. Screening upon admission is essential to detect these youngsters' medical problems and concerns. Further, since many of their health problems may have been neglected in the past, ongoing health care services are needed in all detention programs. In a time of shrinking fiscal resources, public health professionals, adolescent specialists, and pediatricians can play a major role in assuring the provision and standardization of the health care for young people in juvenile justice programs.

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## Hospital Discharge Data Used as Feedback in Planning Research and Education for Primary Care

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### SYNOPSIS

*Are research and training programs in pediatrics, internal medicine, and obstetrics and gynecology (OB-GYN) comprehensive enough to give trainees proficiency in primary care? Controversy exists about which subject areas should be added to the training schema to make them more applicable in primary*

*care. One approach to this controversy is to use the most frequent of serious patient problems that are outside these disciplines as feedback into the process of selecting areas for more comprehensive training.*

*In this study, patients' serious problems were defined as those requiring hospitalization. Diagnoses from the National Hospital Discharge Survey were grouped into categories of morbidity by age and sex. The most frequent categories outside the three disciplines were identified. For pediatrics these problems were trauma, mental disorders, and unintended pregnancy; for internal medicine, trauma, mental and gynecologic disorders, and unintended pregnancy; for OB-GYN, trauma and mental, cardiovascular, pulmonary, gastrointestinal, and arthritic disorders.*

*Since primary care is largely ambulatory care, the next step in the resolution of the controversy would be to define the competency level needed for the prevention, early recognition, and early management of these disorders in the ambulatory care setting. Once defined, competency levels can be examined*