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# ASSESSMENT OF EPSDT PRACTICES AND COSTS

## REPORT ON THE COST IMPACT OF THE EPSDT PROGRAM

December 10, 1976

Prepared for:

Office of Planning, Research, and Evaluation
Social and Rehabilitation Service
Department of Health, Education, and Welfare

In Partial Fulfillment of:

Contract No. SRS-500-75-0019



APPLIED MANAGEMENT SCIENCES

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## ACKNOWLEDGEMENTS

In addition to the authors cited above, Pauline Charpentier was involved in data collection at the local site level. Overall direction and review was provided by Douglas E. Skinner, Senior Vice-President and Todd S. Tucker, Ph.D., President.

Applied Management Sciences wishes to express its appreciation to Mr. William Hickman, Project Officer, of the Social and Rehabilitation Service, for his assistance in the conceptualization, organization, and review of the report.

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## EXECUTIVE SUMMARY

In April and May of 1976, four screening sites and the State administrative headquarters in two States were visited to assess the impact of EPSDT (Early and Periodic Screening, Diagnosis, and Treatment) Program on Medicaid expenditures. The primary objectives of this study were (1) to determine the impact of the EPSDT program on (a) the cost and (b) the utilization of medical services by type and location of service, (2) to measure EPSDT administrative costs at the State and local levels, and (3) to determine the extent to which the EPSDT program has modified short-run total Medicaid child health care expenditures for a one-year period in two States. The site cost data used here are for the four sites visited during the cost study. The utilization data and medical care cost data used here are derived from a random sample of the billing histories of each State's EPSDT eligible children.

The following major findings and conclusions resulted from the study (caution should be used in generalizing these findings to other States).

### Impact of EPSDT on Utilization of Medical Services under Medicaid

- After adjustments were made to the raw data to account for the effects of screening itself on reported utilization of services, utilization differences were found to exist between screened (EPSDT) and unscreened (non-EPSDT) members of each State's Medicaid eligible population.
- In both States, screened persons used fewer physician office visits, fewer pharmaceutical prescriptions, and fewer inpatient hospital days than did unscreened persons. In both States, screened persons used more dental procedures, more clinic visits, and more optical service visits than did unscreened persons.

- In several medical service categories, screened persons were higher utilizers in one State and lower utilizers in the other State in comparison with unscreened individuals in the same State. These medical service areas were outpatient hospital visits, physician other visits, physician emergency visits, and other service units (i.e., podiatrist, independent laboratory, ambulance, etc.). State 1 relies exclusively on public clinics and hospital outpatient departments for screening while State 2 relies primarily on private practitioners for this service. The relatively high utilization of hospital outpatient services for general medical care by screened eligibles in State 1 may be accounted for by clinic-oriented referral patterns of the public screening providers in that State.

- Utilization differences between screened and unscreened members of the samples in both States were attributed to EPSDT. Notable among these differences was the tendency of screened persons to use fewer inpatient hospital days and physician office services and more dental and optical services than their unscreened counterparts in the Medicaid population.

- Another notable difference in utilization patterns between screened and unscreened eligibles in the two States arises from the fact that inpatient hospital care use is sharply lower among those with screening than among those without screening, while general medical outpatient service utilization is only moderately lower among screened than among unscreened eligibles. Thus, EPSDT screening appears to have diminished the utilization of general medical services and to have shifted the emphasis in remaining general medical service use toward ambulatory care settings and away from hospitalization.

- Some of the differences in EPSDT impact in the two States may be related to the fact that State 2 is highly urban while State 1 is relatively rural. We find, for example, that the utilization of general medical (including inpatient) services among the unscreened is higher in State 2 than in State 1. If it can be inferred from this that there is an urbanization related tendency to over-utilize general medical services in State 2, then one can readily anticipate our finding that screening had a stronger utilization decreasing impact in State 2 than in State 1.

## Impact of EPSDT on Expenditures for Medical Services Under Medicaid

- Medicaid provides payment for covered medical services received by eligible persons. Since screening was shown to affect utilization of services, it can be expected that it will also affect costs. We assessed the direction, magnitude, and cause of cost changes for each covered service by making a service-by-service expenditure comparison for screened and unscreened members of our sample populations in two States. These comparisons are based on service costs alone and exclude the expenditures associated with screening. The expenditure difference found between screened and unscreened persons was defined as the medical service expenditure impact of EPSDT.

- Findings showed that the expenditure differences between screened and unscreened eligibles followed the same pattern as utilization differences with the exception of one service category (physician office visits) in State 1. In both States, expenditures for screened persons were lower for pharmaceutical prescriptions and inpatient hospital days than for unscreened persons. In both States, expenditures for screened persons were higher for dental procedures, clinic visits, and optical services than for unscreened persons. In several medical service categories, screened persons had higher expenditures in one State and lower expenditures in the other State in comparison with unscreened persons in the same State. These medical service categories were physician office visits, outpatient hospital visits, physician other visits, physician emergency visits, and other service units.

- In aggregate, it was found that EPSDT reduced Medicaid medical service costs only in highly urbanized State 2. Medical services costs in State 2 were reduced $46,885 for the screened sample population. In the relatively rural State 1, EPSDT increased medical services costs $9,096 for the screened sample population. On a per capita basis, screened persons expended $195.22 and unscreened eligibles expended $253.83 in State 2. In State 1, screened persons had medical service expenditures of $155.70 per capita, and unscreened eligibles had $144.33 in medical service expenditures per capita.

- These findings suggest that while EPSDT may uniformly encourage the development of appropriate patterns of medical care use it may not always bring about a decline in Medicaid medical service expenses in the short-run. This appears to be due to the existence of substantial overutilization of certain types of services by those without screening in the highly urban State and the absence of any service sector with substantial overutilization among unscreened eligibles in the more rural State.

Impact of EPSDT on Local Site Costs

- Local providers and social service agencies incurred administrative and operational costs in providing EPSDT services. These costs were measured by using the Medicaid reimbursement rate per screening for the providers and the Medicaid reimbursement applicable to EPSDT for social service agencies.
- We found that the Medicaid cost impact of providing EPSDT services at the local level was greater than anticipated except in one instance. The total Medicaid cost impact per screened eligible at the local site level was $130.29 for Site 1, State 1, and $29.09 for Site 2, State 1. In State 2, the local cost impact was $157.22 per screened eligible at Site 3 and $169.20 at Site 4.
- The Medicaid cost impact of providing case finding and case management services was greater than the cost impact of providing screening at three of the four sites. The Medicaid cost impact of EPSDT social services was $117.39 and $9.09 per screened eligible in State 1 where Medicaid reimbursed the screening providers $12.90 and $20.00 per screened eligible, respectively. In State 2, the social service cost per screened eligible was $137.22 at Site 3 and $144.20 at Site 4, while screening examination provider reimbursement was $20.00 at Site 3 and $25.00 at Site 4.
- The cost of the EPSDT program can be assessed not only in terms of its Medicaid cost, but also from two other perspectives. Cost can be measured in terms of the total resources utilized in implementing the EPSDT program, or in terms of the additional or incremental resources that local screening providers or social service agencies must add to implement the program beyond their present capabilities. The appropriate cost measure depends on the purpose of the study.
- We found that each measurement perspective led to a different result. Total local resource costs for social service agencies were slightly greater than their reimbursement. However, total resource costs for screening providers were substantially greater than their reimbursement.
- While we were not able to accurately ensure the incremental cost of providing EPSDT services, our impression is that these costs were high for social service agencies, but quite low for screening providers. For social service

agencies, reimbursement and incremental program costs are probably equal but less than total resource costs. In contrast, public screening providers were able to shift existing resources quite easily to EPSDT. One might even find in some locations that reimbursement to screening providers exceeds the cost of resources specifically acquired by these agencies to implement EPSDT. For each of the four screening providers included in this study, however, it is our judgment that the Medicaid cost impact of EPSDT as reported is approximately equal to the incremental program cost.

Impact of EPSDT on State Administrative Costs

- The findings indicate that the EPSDT Program increased State administrative costs for Medicaid $102,386 in State 1 and $218,455 in State 2.
- The analysis of the findings shows (1) that the impact of the EPSDT Program on State administrative costs in each of the two States was very small in comparison to local site EPSDT costs, (2) that the differences between the two States in administrative cost per screened eligible was substantial, and (3) that the majority (95 percent) of State administrative costs for both States consisted of labor and overhead.

Impact of EPSDT on Total Medicaid Expenditures

- The impact of the EPSDT program on a State's total Medicaid expenditures is defined as the difference between extrapolated EPSDT Program costs (screening, case finding, and case management at the local level, program administration at the State level, and Medicaid services expenditures for the screened sample population) and extrapolated medical services expenditures for the non-screened population.
- It was found that the EPSDT program increased total Medicaid expenditures in all of the four study situations.
- The analysis of the findings brought out several additional points:
  - .. The cost of program administration at the State level was very low in both States. It played a very minor role in affecting the overall impact of the EPSDT program on total Medicaid expenditures in comparison to local site costs.
  - .. The cost of the program operation at the local level was extremely high. Local level costs significantly increased EPSDT program costs and Medicaid expenditures.

- In State 1, the increase in total Medicaid expenditures was a result of incurring EPSDT costs for State and local level operations and, unlike State 2, the EPSDT population incurring higher medical services' expenditures than the non-EPSDT population.
- In State 2, the increase in total Medicaid expenditures resulted solely from incurring EPSDT costs at the State and local level. The EPSDT population incurred substantially lower medical services' expenditures than the non-EPSDT population.

# SECTION I: INTRODUCTION

*Current interest in provision of EPSDT services to Medicaid eligibles under 21 includes interest in identifying the cost impact of the program. Cost is a critical issue that must be addressed if the EPSDT services are to be provided to an increasing number of children in an efficient and cost-effective manner.*

*The objectives of this study were (1) to determine the impact of the EPSDT program on (a) the cost and (b) the utilization of medical services by type and location of service, (2) to measure EPSDT costs at the state and local levels, and (3) to determine the extent to which the EPSDT program has modified short-tun total Medicaid child health care expenditures for a one-year period in two states.*

*The cost impact methodology was devised to produce reasonably reliable and valid findings. The first step of the methodology was to define the objectives of the study and to develop relevant hypotheses. Following this, terms and measurement categories were defined. A study design for each objective was developed with attention toward controlling external biases. After the design phase, a data collection strategy was devised to identify relevant data sources and to collect the data. The final step in the methodology was the design of the data presentation and analysis plan.*

In 1967, Title XIX of the Social Security Act was amended to require all states with Medicaid programs to provide Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) services to Medicaid eligibles under 21 years of age. The EPSDT program was designed to detect health deficiencies at an early age and

improve the health status of needy children. The objective of the program was to replace fragmented episodic or crisis medical care with an orderly system of preventive medical care within the Medicaid program.

By 1971, the Department of Health, Education and Welfare had developed regulations for the program, but states were reluctant to implement the program. As Howard Newman, the Commissioner of the Medical Services Administration, pointed out to the National Health Forum in 1974, "The desire to provide a necessary and politically desirable service, and the competition for very limited resources prevented the early development of the EPSDT program." The final regulations, effective February 1972, eased the concern of states about the cost of the program and the limited availability of health care resources for this program. These final regulations imposed a revised, two-stage implementation plan for the EPSDT program. In the first stage, only eligible children under six (6) years of age were to receive a screening. The second stage (effective July, 1973) required states to screen children between the ages of six (6) and twenty-one (21).

Even with these modifications, the implementation of the ESPDT program was financially difficult for most states. The costs of medical care had risen dramatically for all Medicaid programs over the 1968-75 period. Total vendor payments under Medicaid in 1968 were $3,950 million. By 1975 total payments were $12,950 million (an increase of about 225% from 1968).[1/] Although the major part of this cost increase was due to rising prices for health care services, a large share of the cost increase was due to the growth of the beneficiary population. The National Center for Social Statistics estimated that there were approximately

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1/ DHEW, Social and Rehabilitation Service, "Fiscal Year 1975" Pubn. No. SRS-76-04023.

13 million Medicaid recipients in 1968 on whose behalf payments were made to medical vendors. By 1975, the number of recipients of medical care under Medicaid had jumped to 22.4 million, an increase of about 90 percent. Of this number, 15.8 million were AFDC recipients and roughly 68 percent of the AFDC population (about 10 million children) was eligible for the EPSDT program. The cost impact of servicing such a large population on a repetitive basis, coupled with the external financial constraints facing most states because of demands in other sectors, left many states in an uneasy financial position concerning the operation of the EPSDT program. It is within this conflicting framework of uneven EPSDT program development, expansion in the eligible population, and increased medical care prices that this report is written.

## Assessment Methodology

The methodology for the Cost Impact Study was designed to collect and analyze cost and utilization data from a number of sources to yield valid findings about the cost of operating the EPSDT program. The first step of the methodology comprised two parts: to identify the objectives of the study and to state the major hypotheses relevant to the objectives.

Three principal objectives were identified:

- Objective 1 - to determine the impact of the EPSDT program on the use and cost of medical services (excluding screening) by Medicaid participants in EPSDT compared to Medicaid recipients who do not participate in EPSDT.
- Objective 2 - to measure EPSDT costs at the state and local levels.
- Objective 3 - to determine the extent to which the EPSDT program modified a state's total Medicaid child health expenditures over the short term (one year).

Several hypotheses related to the major objectives were developed. The hypotheses were as follows:

- Participation in the EPSDT program would shift an eligible's utilization of medical services (treatment) away from inpatient services toward ambulatory care.
- Participation in the EPSDT program would acquaint eligibles with a broader range of treatment providers with a subsequent short-term increase in treatment utilization.
- Participation in the EPSDT program would cause a short-term increase in treatment expenditures.
- Operation of the EPSDT program would cause Medicaid program costs to increase over the short-term, with operating costs varying by state.

The next step was to identify and define those costs relevant to the major objectives of the study. For objective 1, Medicaid payments for medical services, excluding screening examinations, constituted the relevant cost. Determining the relevant costs for objective 2 presented a more complex problem. At the State agency level, total administration and overhead costs incurred in administering the EPSDT program were relevant. These costs included personnel, overhead, facilities, equipment and supplies used for EPSDT. For local sites, reimbursement provided by Medicaid to social service agencies and screening providers for EPSDT services was considered the relevant EPSDT cost. Reimbursement to social service agencies included payment for both case finding (identification, notification, outreach, confirmation of interest, scheduling and confirmation of appointment, transportation to and from screening appointment) and case monitoring (scheduling referral appointments, follow-up of appointment no-shows and referral appointments) activities. Medicaid reimbursement to screening providers encompassed all EPSDT activities performed by the local provider including evaluation of findings, counseling, education and administration. The total resource cost of providing EPSDT at the local level were also considered for use as a cost measure in this study. However, these costs did not provide a true picture of the EPSDT cost impact on Medicaid.

The third step of the study design was the specification of the data collection plan. To measure the use and cost of medical services, the plan called for:

- Medical services cost and utilization information to be collected on 1,600 eligibles from each of two states, (800 EPSDT participants and 800 non-participants)
- Twelve-month time period for utilization and expenditure data
- Proportional stratified random sampling for four (4) strata for each sample population: (1) non-white, under six, (2) non-white, over six, (3) white, under six, and (4) white, over six.

To measure EPSDT cost impact at the local level, the plan called for:

- Selection of two (2) local EPSDT provider sites per state for measuring relevant local screening costs
- Selection of two (2) local social service agencies per state for the measurement of relevant social service costs.

Measurement of EPSDT cost impact at the state level required:

- Selection of appropriate departments within the State Medicaid Agencies to determine statewide administrative costs.

Assessment of the total cost impact of EPSDT utilized the above elements in an extrapolated form. The difference between the sum of extrapolated EPSDT program costs and estimated medical service costs for screened eligibles (screening, case finding, case management at the local level, program administration at the state level, and Medicaid services expenditures for the screened sample population) and extrapolated medical services expenditures for the non-screened population constituted the total cost impact of EPSDT on Medicaid.

Following the design phase, respondents and/or data services were specified as well as cost categories. The outline by component was as follows:

- Medical services - abstract utilization and cost data from State Medicaid paid claim history files. Classify the data into ten categories: physician office visits, pharmaceutical prescriptions, dental procedures, outpatient hospital visits, physician other visits, clinic visits, inpatient hospital visits, physician emergency visits, optical service visits, and other service units.
- Local site costs - identify reimbursement provided by Medicaid to local social service agencies and local screening providers. For social service agencies, determine the cost of case finding and case monitoring.
- State agency costs - identify the cost of administering the EPSDT program and subcontract costs, if any. Determine the cost of personnel, overhead, facilities, equipment, and supplies.

A data collection outline was drawn up for each data source except where data were to be extracted from the State Medicaid files. For diagnosis and treatment data, computer programs were developed to extract the data from the State Medicaid files. Figure 1.1 illustrates the steps used in extracting the data from the files.

The final step of the methodology was to design a data analysis plan. The analysis plan, following from the objectives of the study, was divided into three components:

- Analysis of the differences in utilization and cost of Medical services between EPSDT and non-EPSDT eligibles. This analysis would examine the utilization and cost differences between the two groups of eligibles for each of the ten medical service categories.
- Analysis of EPSDT costs at the state and local levels. This component of the analysis would be limited to a comparison of costs among sites or states, and a discussion of total resource costs and incremental program costs at the local level.
- Analysis of the total cost impact of EPSDT on Medicaid. The analysis of the total cost impact would focus on the extent to which EPSDT modified the state's Medicaid budget over the short term. The analysis would also look at those factors that substantially increased the cost impact of EPSDT.

Each component section of the data analysis plan required consideration of a number of issues. In analyzing the utilization of medical services, care was taken to ensure that the raw data were adjusted to exclude screening utilization from

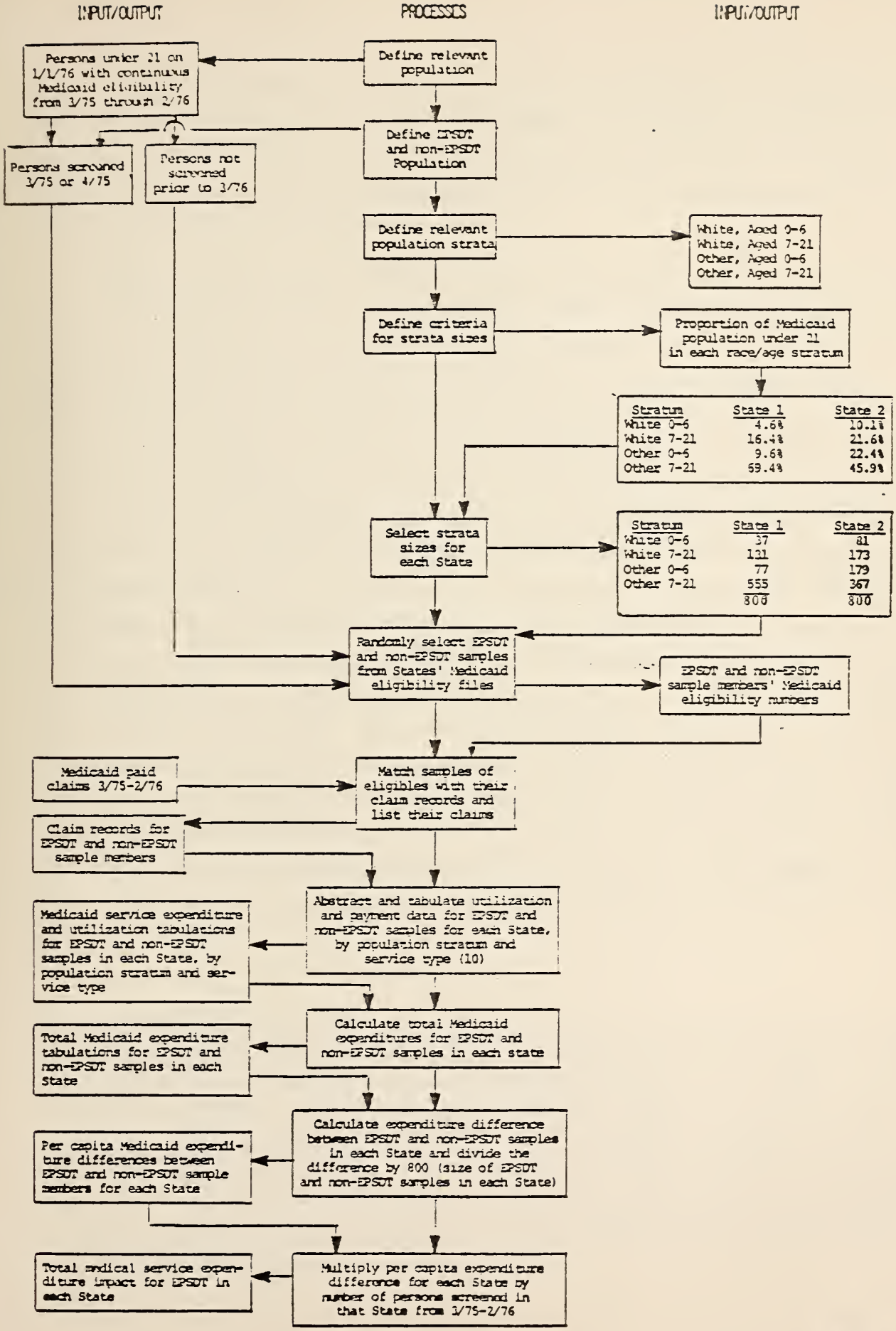


FIGURE 1.1: MEDICAID COST AND UTILIZATION DATA EXTRACTION PROCEDURES

the estimate of total service use before analysis.* Failure to do this would have led to overestimates of screened childrens' medical service (non-screening) utilization of clinic services in both States, and of physician office visits and hospital outpatient department visits in State 2.

This part of the study was also undertaken with a sensitive view to other factors. We were aware that medical providers interact with one another as well as with the patient in determining utilization patterns and that some types of medical services may be good substitutes for others in the view of the professionals in the field and/or of the service recipient. It was also important to be cognizant of the fact that service preference patterns on the part of recipients may account for observed utilization patterns on the part of recipients and that EPSDT may affect these preference patterns. Finally, we expected to find that EPSDT increased the proportion of people in a group who use medical services and that this might affect the findings. The analysis plan was responsive to these potential problems. It took into account the possibilities that the screening process itself may have influenced the choice of provider type without influencing the type of service provided; that preferences and perceptions about health in the group of screening recipients might not have fully reflected those of screening providers or of the medical care community; and that EPSDT might be unfairly cast in an unfavorable light if an

*The adjustments made to the sample data in both States are imperfect because we assumed that each screened eligible had only one screening visit in the year of observation and, in State 2, because we assumed that the members of the sample of each of the screened strata used the different screening providers in the same relative proportions as did all of those screened in State 2 in the year of the study. The result of using these assumptions is that we have overstated non-screening utilization to a small degree in both States and that we have misallocated outpatient service use in each stratum among those with screening in State 2 to an unknown degree.

increase in the number of medical service users caused by the program was not offset by a decline in average utilization for each recipient of a service.

The analysis plan for measuring EPSDT impacts on medical services costs took into account many of the potentially troublesome questions expected in the utilization work. In addition, since expenditure variations result both from price and volume of utilization variation, the plan took into account the need for separately studying the apparent impact of EPSDT on the cost of medical services delivered to Medicaid eligible children. In particular, unit cost data were expected to reveal the impact of EPSDT on the complexity or intensity of service delivery in each setting.

In outlining the review of State administrative costs for EPSDT, proper consideration was given to the organizational differences between the States and to their role in explaining the observed interstate administrative cost differences.

The analysis of local site costs for screening and social services presented a number of problems. The primary issue was how to best measure the cost impact of local sites on Medicaid. The reimbursement provided by the Medicaid program to screening providers and social service agencies is the most direct measure of true cost impact of EPSDT on Medicaid. The total resource cost and the incremental program cost are also valid indicators of cost impact, but they are not directly relevant to the Medicaid program. Other problems connected with the analysis of local site costs were that the sites selected for observation were not randomly chosen and probably are not representative of all sites; that we had no opportunity to observe the response of site costs to changes in screening volume over time; and that the administrative arrangements at one site differed from those at other sites in a manner which affected operating characteristics and the degree of reliability with which site costs for certain activities could be estimated.

Finally, a review of the summary findings was planned so as to take into account each of the individual interpretative issues and problems developed in reviewing utilization, medical services expenditures, state costs, and local site costs.

Overview of the Report

The structure of the report consists of seven major sections:

- Executive Summary. The Executive Summary summarizes the major findings and conclusions of the report.
- Section I: Introduction. This section describes the methodology utilized to design the study and to gather and analyze the data.
- Section II: Impact of EPSDT on Utilization of Medical Services Under Medicaid. The findings and conclusions relating to medical services utilization impact are discussed with presentation of the findings in tabular form where appropriate. Each State is presented separately.
- Section III: Impact of EPSDT on Expenditures for Medical Services Under Medicaid. The findings and conclusions relating to medical services cost impact are discussed. Findings are again presented in tabular form where appropriate. Each State is presented separately.
- Section IV: Impact of EPSDT on Local Site Costs. The cost impact of local screening providers and local social service agencies on Medicaid is identified. The findings of four local sites are discussed and analyzed.
- Section V: Impact of EPSDT on State Administrative Costs. State administrative/overhead costs are aggregated for each State separately.
- Section VI: Impact of EPSDT on Total Medicaid Expenditures. Cost impact of the EPSDT program on each State's Medicaid program is assessed and analyzed.
- Section VII: Reliability and Validity of Study Findings. The reliability and validity of the study findings are discussed and evaluated.

## SECTION II: IMPACT OF EPSDT ON UTILIZATION OF MEDICAL SERVICES UNDER MEDICAID

*EPSDT was expected to affect amounts and types of medical services utilized by Medicaid eligibles who participated in screening. Specifically, it was hypothesized the EPSDT participation would be associated with decreased use of inpatient services and increased use of ambulatory services. A supplementary hypothesis stated that EPSDT would be instrumental in identifying particular health problem areas such as dental, vision, and hearing abnormalities, and in securing treatment for the abnormalities. Thus, medical services utilization was expected to increase in these selected specialty areas.*

*Medical services were divided into ten categories. Units of utilization, such as visits, days, prescriptions, etc., were specified for each medical service category. Utilization was defined as a Medicaid payment for one unit of any medical service type. Adjustments were made to the raw data to subtract screening visits from total reported utilization so that an adjusted "medical service" utilization count could be reported here.*

*In both States, screened persons used fewer physician office visits, fewer pharmaceutical prescriptions, and fewer inpatient hospital days than did unscreened persons. In both States, screened persons used more dental procedures, more clinic visits, and more optical service visits than did unscreened persons.*

*In several medical service categories, screened persons were higher utilizers in one State and lower utilizers in the other State in comparison with unscreened individuals in the same State. These medical service areas were outpatient hospital visits, physician other visits, physician emergency visits, and other service units (i.e., podiatrist, independent laboratory, ambulance, etc.).*

*Utilization differences between screened and unscreened members of the samples in both States were attributed to EPSDT. Notable among these differences was the tendency of screened persons to use fewer inpatient and physician office services and more dental and optical services than their unscreened counterparts in the Medicaid population.*

*Another notable difference in utilization patterns between screened and unscreened eligibles in the two States arises from the fact that inpatient hospital care use is sharply lower among those with screening than among those without screening, while general medical outpatient service utilization is only moderately lower among screened than among unscreened eligibles. Thus, EPSDT appears to have both diminished the use of general medical services and to have shifted the emphasis in remaining general medical service use toward ambulatory care settings and away from hospitalization.*

*Some of the differences in the degree to which EPSDT appears to have affected utilization in the two States may reflect underlying differences in health service use patterns in highly urban (State 2) and more rural (State 1) areas of the country. In particular, the relatively high use of hospital days and of general medical outpatient care by those without screening in State 2 as compared with those without screening in State 1 is notable. It suggest that the more urban State has a tendency to overutilize those services and that EPSDT screening can be expected to have a greater impact on the use of these services in such a State than in one which is more rural or has a lower rate of service utilization in the unscreened population.*

## Service Categories

Before presenting the findings on utilization by screened and unscreened Medicaid eligibles in the two States studied, it is well to provide capsule descriptions of the service categories used in the analysis. The service categories used are the following:

- Physician Office Visit - four types of services are included in this category: physician office visit, physician billed x-ray procedures, physician billed laboratory procedures, and physician billed injections. When more than one of these service types is provided by a single physician to one patient on the same day and one of these services

is an office visit, only the office visit is counted as a utilization unit. When no office visit is recorded but other services included in this category are performed, all of those services performed on one date are considered to be part of one office visit.

- Pharmaceutical Prescriptions - new and refilled prescriptions. Each medication is counted as a single unit whether or not these medications have been ordered on a single prescription.
- Dental Procedures - individual dental procedures such as x-rays, extractions, filled cavities and dental education sessions.
- Outpatient Hospital Visits - individual visits to hospital outpatient departments. As in the case of physician office visits, all procedures billed separately by the hospital on the date of the outpatient visit are considered to be elements of that visit and are not separately enumerated. However, where x-rays, laboratory procedures, and injections are billed to Medicaid by individual physicians they have been recorded as physician office visit components even when we suspect that they were parts of the outpatient hospital visit encounter. Certain other individual physician billed procedures which may have been associated with a hospital outpatient department visit have been recorded as Physician Other Visits as we cannot be certain that they indeed were associated with hospital outpatient visits.
- Physician Other Visits - individual physician services other than emergency care, care by ophthalmologists, office visits, and separately billed laboratory procedures, x-rays, and injections provided by one physician to a single patient on one day. When a physician service is performed during a period of hospitalization, regardless of the procedure, it is considered a physician other visit. The vast majority of physician other visits, in fact, do occur during hospitalization.
- Clinic Visits - clinic services provided to one patient on one day but not billed as a physician visit.
- Inpatient Hospital Days - hospital days billed to Medicaid (admission date subtracted from discharge date).
- Physician Emergency Visits - visits billed by physicians for emergency care largely in hospital emergency rooms

- Optical Service Visits - services performed on a single day by one provider for one patient and billed to Medicaid as having been for eye services. We have grouped the services of ophthalmologists, optometrists, opticians, and corporate providers of vision services in this category.
- Other Service Units - a general category that contains ambulance trips, prosthetic devices, nursing home days, laboratory services billed by independent laboratories, and other services which are not included elsewhere in the tabulations.

Utilization of Services in State 1

The utilization findings for State 1 are displayed in Tables 2.1 and 2.2. The values in Table 2.1 are total utilization for 800 screened and non-screened Medicaid eligibles in four population strata (white 0-6, white 7-21, non-white 0-6, and non-white 7-21). The values shown have been adjusted to remove the effects of 800 clinic screenings* and of an intentional oversampling of records from the utilization tally. The utilization figures in Table 2.1 have been divided by the population count for each stratum to arrive at Table 2.2 where average service use rates for "typical" screened and unscreened eligibles are presented.

The total utilization figures shown at the right hand margin of Tables 2.1 and 2.2, should be interpreted with care as the units of account used for individual services differ one from another. For example, a hospital day is given the same weight in the total column as a dental bitewing x-ray though the first costs $100 or so and the second less than $5 and despite the fact that a bitewing x-ray is a routine diagnostic procedure while a hospital day is not a routine occurrence in general medical care for children. Since the service mix represented by the total utilization column is so heterogeneous it

*There is internal evidence in the billing records of State 1 that a number of screened patients were screened more than once, or were partly screened at one visit and completed screening at a second visit. The evidence consists of a number of repeat clinic visits by screened persons billed to the State for $12 (the normal screening charge) at clinics where the State was rarely charged $12 for visits by unscreened eligibles.

TABLE 2.1: MEDICAID UTILIZATION BY THE SAMPLE POPULATION IN STATE 1, BY AGE/RACE STRATUM, SCREENING STATUS, AND SERVICE TYPE: MARCH 1, 1975 - FEBRUARY 29, 1976

| RECIPIENT GROUP | SCREENED | SERVICES | | | | | | | | | | SAMPLE | TOTALS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Physician Office Visits | Pharmaceutical Prescriptions | Dental Procedures | Outpatient Hospital Visits | Physician Other Visits | Clinic Visits | Inpatient Hospital Days | Physician Emergency Visits | Optical Service Visits | Other Service Units | | |
| WHITE | YES | 80 | 94 | 34 | 35 | 16 | 20 | 5 | 2 | 1 | 5 | 37 | 292 |
| AGED 0-6 | NO | 89 | 100 | 33 | 11 | 15 | 6 | 5 | 1 | 5 | 0 | 37 | 265 |
| WHITE | YES | 107 | 292 | 753 | 105 | 97 | 43 | 24 | 9 | 20 | 28 | 131 | 1,478 |
| AGED 7-21 | NO | 157 | 265 | 499 | 87 | 29 | 29 | 28 | 0 | 8 | 1 | 131 | 1,123 |
| OTHER | YES | 224 | 258 | 87 | 47 | 58 | 52 | 9 | 2 | 7 | 0 | 77 | 744 |
| AGED 0-6 | NO | 337 | 311 | 39 | 20 | 43 | 4 | 32 | 1 | 0 | 0 | 77 | 787 |
| OTHER | YES | 813 | 964 | 2,857 | 251 | 270 | 196 | 234 | 19 | 93 | 12 | 555 | 5,709 |
| AGED 7-21 | NO | 1,044 | 1,441 | 2,219 | 275 | 136 | 105 | 238 | 5 | 81 | 215 | 555 | 5,759 |
| TOTALS | YES | 1,224 | 1,608 | 3,731 | 438 | 441 | 311 | 272 | 32 | 121 | 45 | 800 | 8,223 |
| | NO | 1,627 | 2,117 | 2,790 | 393 | 223 | 164 | 303 | 7 | 94 | 216 | 800 | 7,934 |

TABLE 2.2: PER CAPITA MEDICAID UTILIZATION BY THE SAMPLE POPULATION IN STATE 1, BY AGE/RACE STRATUM, SCREENING STATUS, AND SERVICE TYPE: MARCH 1, 1975 - FEBRUARY 29, 1976

| RECIPIENT GROUP | SCREENED | SERVICES | | | | | | | | | | SAMPLE | TOTALS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Physician Office Visits | Pharmaceutical Prescriptions | Dental Procedures | Outpatient Hospital Visits | Physician Other Visits | Clinic Visits | Inpatient Hospital Days | Physician Emergency Visits | Optical Service Visits | Other Service Units | | |
| WHITE AGED 0-6 | YES | 2.16 | 2.54 | .92 | .94 | .43 | .54 | .14 | .05 | .03 | .14 | 37 | 7.89 |
| | NO | 2.40 | 2.70 | .89 | .30 | .40 | .16 | .14 | .03 | .14 | 0 | 37 | 7.16 |
| WHITE AGED 7-21 | YES | .82 | 2.23 | 5.75 | .80 | .74 | .33 | .18 | .07 | .15 | .21 | 131 | 11.25 |
| | NO | 1.20 | 2.02 | 3.81 | .67 | .22 | .37 | .21 | 0 | .06 | .01 | 131 | 8.57 |
| OTHER AGED 0-6 | YES | 2.90 | 3.35 | 1.13 | .61 | .75 | .68 | .12 | .03 | .09 | 0 | 77 | 9.66 |
| | NO | 4.38 | 4.04 | .51 | .26 | .56 | .05 | .41 | .01 | 0 | 0 | 77 | 10.22 |
| OTHER AGED 7-21 | YES | 1.46 | 1.74 | 5.15 | .45 | .49 | .35 | .42 | .03 | .17 | .02 | 555 | 10.28 |
| | NO | 1.88 | 2.60 | 4.00 | .50 | .24 | .19 | .45 | .01 | .14 | .59 | 555 | 10.58 |
| TOTALS | YES | 1.53 | 2.01 | 4.66 | .55 | .55 | .38 | .34 | .01 | .15 | .06 | 800 | 10.27 |
| | NO | 2.05 | 2.64 | 3.49 | .49 | .28 | .20 | .39 | .01 | .12 | .27 | 800 | 9.9[illegible] |

is probably best to judge differences in results in any stratum as being meaningful only if they are quite large.

The following analysis discusses the service categories in groups which are related to one another. General medical outpatient care, including physician office visits, outpatient hospital visits, clinic visits, and physician emergency visits, constitute one broad category. A second is composed of the inpatient care related activities of inpatient hospital days and physician other visits. The third category is comprised of services to which referrals are emphasized within the EPSDT program and these are dental procedures and optical service visits. The fourth category contains only pharmaceutical prescriptions. The final category contains only one item, other service units. This last category is a very heterogeneous and difficult to analyze array of non-physician medical services. In each case the findings are presented and then analyzed.

General Medical Outpatient Services - Findings

Screened persons in the State 1 sample used 8 percent fewer general medical outpatient services than did unscreened eligibles in the year of this study. Relatively low service use by screened eligibles was confined to the physician office visit category (25 percent fewer visits for those screened than for unscreened eligibles). Screened children had higher utilization rates than the unscreened children in the hospital outpatient departments (+11 percent), clinic (+90 percent), and physician emergency visit (+357 percent) service categories.

When the data are examined by cohort (white 0-6, other 0-6, white 7-21, and other 7-21), we find the general pattern of relatively low overall utilization of general medical outpatient services by the screened group but a relatively high use of clinic, hospital outpatient department, and physician emergency services by them in most strata. Only in the white 0-6 stratum are screened persons relatively heavy users of general medical outpatient services and this reversal of the overall pattern is largely due to their extraordinarily frequent use of hospital outpatient departments and clinics.

Analysis

The overall decline in outpatient service use which EPSDT appears to have caused in State 1 is contrary to what we had expected to find. We had assumed that EPSDT would have only little short term effect on disease incidents or prevalence and that its major effect on the case of general medical outpatient service would be to add visits for remedying health problems discovered during screening to preexisting levels of service use for episodic health care.

We do find some evidence in the results shown in Tables 2.1 and 2.2 that EPSDT produced a shift in service use toward settings specializing in intensive diagnostic workups and remedial therapy, that is to say to clinics. Further this effect was particularly strong in the younger age groups where, under impetus from the Federal Government's Maternal and Child Health Program, the states have long since developed an intensive capability for diagnosing and treating crippling and life threatening conditions in young children. However this finding may simply be due to the fact that screenings in State 1 are performed by public health clinics and at times by hospital outpatient departments which may have an institutional bias toward making diagnostic treatment referrals to similar institutions rather than to private practice physicians.*

* In State 2, where most screening visits were provided by private practitioners, screened eligibles used more clinic services but fewer hospital outpatient department services than did unscreened eligibles.

Pharmaceutical Prescriptions - Findings

Screened persons in the State 1 sample used 24 percent fewer pharmaceutical prescriptions than did their unscreened counterparts. Relatively low pharmaceutical utilization among the screened is evident in all strata except for that of whites ages 7-21.

Analysis

Screened persons used fewer outpatient services than did unscreened persons in the sample. For this reason, it is natural to expect that screened eligibles would have fewer prescriptions filled than would their unscreened counterparts unless the types of service received by those with screening were different from those received by unscreened persons.* The evidence we find here is confusing in that it shows that outpatient service use by those with screening is 8 percent lower than that for persons without screening, that screened persons used 24 percent fewer prescriptions than unscreened persons, and that a relatively large share of screened persons' outpatient service use took place in clinic and hospital outpatient department settings which may have included the provision of medications in their service and in their visit billings to Medicaid.

Shifting focus to the private practitioner, who dispenses drugs less frequently than do clinics and hospital outpatient departments, we find that physician office visit utilization and pharmaceutical prescription utilization were lower to roughly the same extent among screened than among unscreened persons (25 percent in the case of office visits and 24 percent in the case of

*Actually, we would expect either the number of drugs purchased or the average cost of a prescription to be affected by differences in treatment regimens for screened and unscreened eligibles. Here only utilization is discussed. When the focus shifts to expenditures, it will be evident that the conclusions stated here must be modified.

prescriptions). This suggests that the apparent reduction in drug use in the wake of screening may be due to the lowered utilization of physician office visits and that the actual drop in drug use "caused" by EPSDT screening may be less than it appears to be from the prescription count.*

The higher use of prescriptions by screened than by unscreened whites ages 7-21 cannot be explained on the basis of the evidence available. This finding and other components of the strata results with respect to drug usage merit further investigation.

Inpatient Care and Related Activities - Findings

The screened population in State 1 used 12 percent fewer hospital days but 98 percent more physician other visits (largely in-hospital services) than did the sample of unscreened eligibles during the study year. This pattern was evident in three strata. Young whites, though, had an identical utilization rate for inpatient days and a nearly identical utilization rate for physician other visits in the screened and unscreened groups.

Analysis

The findings indicate that EPSDT caused a decline in hospitalization. This decline was more pronounced than the drop in general medical service outpatient use. This pair of findings provides some support to our hypothesis that EPSDT would induce a shift in service use patterns away from inpatient and toward outpatient care. This argument can be made with more force if one assumes either: that the relatively high clinic and hospital outpatient department use by those screened is not a transitory phenomenon related to intense efforts to remedy health problems uncovered during screening; that the relatively low inpatient utilization by screened eligibles is a permanent effect of EPSDT; or that the sharply reduced physician office visit use by screened eligibles is a transitory effect of EPSDT. The data available to

*All pharmaceutical bills in the claims records appeared to originate at independent (non-institutional) pharmacies.

us are not sufficient to support or refute the validity of these suggested EPSDT effects.

The evidence on physician other visits, most of which are associated with hospital stays, shows that screened children received more than twice as many physician services per inpatient day (1.62) as did unscreened children (0.74). This finding suggests that the content of inpatient care for screened children may have been much more intensive than it was for unscreened children. However, cost data reported elsewhere in this study do not support this suggestion.

Dental Procedures and Optical Visits - Findings

The EPSDT screened sample used 34 percent more dental services and 29 percent more optical services than did the unscreened sample in State 1. Among the strata, the only exception to the rule of relatively heavy optical and dental service use among the screened eligibles is found among whites, ages 0-6. There is very little optical and dental service use altogether in this stratum because of the small number of children involved, so that these estimates are subject to an unusually high degree of statistical uncertainty and should be treated with caution. The estimated utilization rates for this stratum indicate that the unscreened use more optical services than do those with screening and that dental utilization is similar for the screened and unscreened eligibles.

Analysis

The relatively heavy use of dental and optical services by those with screening supports the contention that EPSDT discovers untreated non-acute health problems and leads to treatment for them.

Vision and dental problems are easily ignored if regular examinations are not performed. This can lead to chronic visual

impairment and to the use of dental care on a crisis basis. The findings in Tables 2.1 and 2.2 suggest that EPSDT tends to lead to prompt care for vision and dental problems and to the avoidance of the long-term consequences of neglecting these problems.

Other Service Units - Findings

The utilization of other services was 79 percent lower among screened than among unscreened eligibles in State 1. However, on a stratum by stratum examination of the findings it is apparent that the relatively high utilization of these services by the unscreened is limited to the Other age 7-21 stratum. In each of the strata, other services use is either greater in the screened group than in the unscreened group or is zero in both groups.

Analysis

Other services are a sum of very diverse health care activities. They include ambulance services, nursing home days (one unscreened person in the Other 7-21 stratum had more than sixty days of nursing home care in the study period), psychological test batteries, appliances (braces and hearing aids for example), and laboratory test profiles billed to Medicaid in State 1 by independent laboratories. The very diversity of the services involved makes it difficult to understand what might cause either the screened or unscreened groups to have relatively heavy utilization of services in this category.

Utilization of Services in State 2

The findings on aggregate and per capita utilization of Medicaid medical services by screened and unscreened eligibles in the study sample in State 2 are presented in Tables 2.3 and 2.4. These tables represent utilization net of screening visits. In backing screening services out of utilization counts we have

TABLE 2.3: MEDICAID UTILIZATION BY THE SAMPLE POPULATION IN STATE 2, BY AGE/RACE STRATUM, SCREENING STATUS, AND SERVICE TYPE: MARCH 1, 1975 - FEBRUARY 29, 1976

| RECIPIENT GROUP | SCREENED | SERVICES | | | | | | | | | | SAMPLE | TOTALS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Physician Office Visits | Pharmaceutical Prescriptions | Dental Procedures | Outpatient Hospital Visits | Physician Other Visits | Clinic Visits | Inpatient Hospital Days | Physician Emergency Visits | Optical Service Visits | Other Service Units | | |
| WHITE AGED 0-6 | YES | 376 | 494 | 93 | 78 | 19 | 15 | 47 | 12 | 17 | 27 | 81 | 1,178 |
| | NO | 442 | 445 | 116 | 83 | 25 | 4 | 65 | 26 | 9 | 26 | 81 | 1,241 |
| WHITE AGED 7-21 | YES | 567 | 805 | 782 | 132 | 76 | 13 | 89 | 12 | 57 | 217 | 173 | 2,750 |
| | NO | 377 | 705 | 802 | 152 | 32 | 36 | 62 | 19 | 42 | 210 | 173 | 2,443 |
| OTHER AGED 0-6 | YES | 598 | 1,002 | 187 | 180 | 44 | 59 | 117 | 13 | 25 | 146 | 179 | 2,371 |
| | NO | 916 | 1,374 | 184 | 217 | 77 | 36 | 172 | 9 | 15 | 161 | 179 | 3,161 |
| OTHER AGED 7-21 | YES | 885 | 1,504 | 1,427 | 290 | 62 | 62 | 61 | 15 | 138 | 674 | 367 | 5,113 |
| | NO | 869 | 1,503 | 1,127 | 358 | 142 | 50 | 395 | 17 | 116 | 464 | 367 | 5,043 |
| TOTALS | YES | 2,426 | 3,805 | 2,489 | 680 | 201 | 149 | 314 | 52 | 257 | 1,064 | 800 | 11,417 |
| | NO | 2,604 | 4,027 | 2,229 | 816 | 276 | 126 | 694 | 71 | 184 | 861 | 800 | 11,888 |

TABLE 2.4: PER CAPITA MEDICAID UTILIZATION BY THE SAMPLE POPULATION IN STATE 2, BY AGE/RACE STRATUM, SCREENING STATUS, AND SERVICE TYPE: MARCH 1, 1975 - FEBRUARY 29, 1976

| RECIPIENT GROUP | SCREENED | SERVICES | | | | | | | | | | SAMPLE | TOTALS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Physician Office Visits | Pharmaceutical Prescriptions | Dental Procedures | Outpatient Hospital Visits | Physician Other Visits | Clinic Visits | Inpatient Hospital Days | Physician Emergency Visits | Optical Service Visits | Other Service Units | | |
| WHITE AGED 0-6 | YES | 4.64 | 6.10 | 1.15 | .96 | .23 | .19 | .58 | .15 | .21 | .33 | 81 | 14.54 |
| | NO | 5.46 | 5.49 | 1.43 | 1.03 | .31 | .05 | .80 | .32 | .11 | .32 | 81 | 15.32 |
| WHITE AGED 7-21 | YES | 3.28 | 4.65 | 4.52 | .76 | .44 | .08 | .51 | .07 | .33 | 1.26 | 173 | 15.90 |
| | NO | 2.18 | 4.08 | 4.64 | .88 | .19 | .21 | .36 | .11 | .25 | 1.22 | 173 | 14.12 |
| OTHER AGED 0-6 | YES | 3.34 | 5.60 | 1.04 | 1.01 | .25 | .33 | .65 | .07 | .14 | .82 | 179 | 13.25 |
| | NO | 5.12 | 7.68 | 1.03 | 1.21 | .43 | .20 | .96 | .05 | .08 | .90 | 179 | 17.66 |
| OTHER AGED 7-21 | YES | 2.41 | 4.10 | 3.89 | .79 | .17 | .17 | .17 | .04 | .38 | 1.83 | 367 | 15.95 |
| | NO | 2.37 | 4.10 | 3.07 | .98 | .39 | .14 | 1.07 | .04 | .32 | 1.26 | 367 | 13.74 |
| TOTALS | YES | 3.03 | 4.76 | 3.11 | .85 | .25 | .19 | .39 | .06 | .30 | 1.33 | 800 | 14.27 |
| | NO | 3.25 | 5.03 | 2.79 | 1.02 | .34 | .16 | .87 | .09 | .23 | 1.08 | 800 | 14.86 |

assumed that each screened eligible received one screening service* and that 84 percent of screening services were provided by private practice physicians, 12 percent by hospital outpatient departments, and 4 percent by clinics in each cohort. The percentage distribution of screening services by source corresponds with the overall distribution of these services among provider types during the year of the study in State 2, but we have no way of knowing whether this distribution accurately represents the pattern of screening service delivery in our sample of screened eligibles and in each cohort within the sample.

General Medical Outpatient Services - Findings

The use of general medical outpatient services in State 2 was 9 percent lower among screened than among unscreened eligibles. The unscreened used more services in physician offices, hospital outpatient departments, and emergency care situations than did those with screening but screened persons used more clinic services than did those without screening.

There are four major exceptions to these general findings in the individual strata.

The white 7-21 stratum showed a very heavy utilization of physician office visits and a very low rate of use of clinic services among those with screening compared to those without screening. This heavy use of physician office visits resulted in a finding that screened members of other strata, used more general medical outpatient services than did their unscreened counterparts.

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*Internal evidence in the State 2 billing records indicates that some eligibles may have been screened more than once or may have had their screenings divided into two parts, each of which was separately billed to Medicaid. Therefore, the outpatient medical service use of screened eligibles is overstated to an unknown degree in Tables 2.3 and 2.4.

The Other 7-21 screened group used physician office services at a slightly higher rate than did their unscreened counterparts; however, this reversal of the general finding for physician office services is not strong enough to make the screened members of this stratum heavier users of all general medical outpatient services than their unscreened counterparts.

Table 2.3 shows that screened members of the Other 0-6 stratum used more emergency physician services than did unscreened members of the stratum and this contradicts the general finding with respect to emergency service use in State 2.*

Analysis

The reduced utilization of general medical outpatient services which seems to have been caused by EPSDT screening, is somewhat surprising. We did not expect that a short run study would show that EPSDT had a favorable impact on the health status of eligibles which would result in reduced outpatient service utilization. In the short run time frame of this study, it seemed reasonable to expect that EPSDT would induce an increased use of outpatient services, as it brought about new demands for diagnostic, preventive, and remedial health care while causing little, if any, reduction in service use for episodic care.

The detailed findings indicate that EPSDT reduced general medical outpatient service use in private practice and hospital outpatient department settings, but induced increased utilization of clinic care settings. The tendency of the screened to heavily use clinics is marked only in the younger cohorts, and this indicates that EPSDT succeeds in identifying illness and crippling conditions among the younger eligibles in State 2 and in influencing those youngsters to make heavy use of the special facilities set up during the 40-year history of the Federal Maternal and Child Health Program to deal with the more serious disabling conditions which affect very young children.

* In State 1, screened eligibles generally used more emergency services than did unscreened eligibles, while here this finding is confined to one stratum.

The atypical findings on physician office and clinic visits in the white 7-21 stratum and on physician office visits in the other 7-21 stratum cannot be explained convincingly on the basis of the information gathered in preparing this report. Therefore these pattern-breaking findings are merely noted here for reference and in order to highlight the fact that this study merely scratches the surface of the question of how EPSDT affects health status and the health care behavior of the eligible population.

Pharmaceutical Prescriptions - Findings

EPSDT screened eligibles in State 2 used 5 percent fewer prescription drugs than did the unscreened control group. However, at the strata level it is evident that only non-whites in the age group 0-6 reflect this overall pattern and that in other strata pharmaceutical utilization is higher among the screened than among those without screening.

Analysis

Pharmaceutical utilization and outpatient service utilization differ by similar degrees between screened and unscreened individuals in State 2 (5 percent lower pharmaceutical, 7 percent lower physician office visit and 9 percent lower general medical outpatient service use among screened than among unscreened eligibles in this State). Therefore, it is reasonable to assume that the medical service utilization differences between the two parts of the study sample largely account for their differences in pharmaceutical usage. Residual discrepancies may be due to the fact that optical and dental service providers (heavily used by screened persons) occasionally write prescriptions for drugs.

The relatively heavy utilization of pharmaceuticals by screened whites in the 0-6 age group (by comparison with unscreened whites ages 0-6) cannot be explained using the information available in this study. The relatively heavy use of pharmaceuticals

by screened whites ages 7-21 appears to roughly mirror their relatively heavy (by comparison with unscreened whites ages 7-21) use of physician office visits. The rough equality between drug usage by screened and unscreened non-whites ages 7-21 seems to reflect the roughly equal use of physician office visits in these samples of Medicaid eligibles.

Inpatient Care and Related Activities - Findings

The screened sample in State 2 used 55 percent fewer hospital days and 26 percent fewer physician other visits (largely inpatient hospital services) than did the sample of unscreened eligibles during the year of the study. At the stratum level, though, Tables 2.3 and 2.4 show that the unscreened sample of whites aged 7-21 had lower utilization rates for these services than did their screened counterparts.

One other interesting aspect of the inpatient utilization findings in State 2 is that the screened sample used more physician other services per patient day than did the unscreened sample. This may show that screened eligibles received more intensive care when hospitalized than did unscreened children.

Analysis

These findings indicate that EPSDT caused a decline in inpatient care in the eligible population and, since the fall in inpatient service use was much more pronounced than the decline in general medical outpatient utilization, that EPSDT induced a shift in emphasis within the spectrum of types of health care toward ambulatory care settings and away from costly inpatient care.

One other interesting aspect of the inpatient utilization findings in State 2 is that the screened sample used more physician other services per patient day (.62) than did the unscreened sample (.40). This may show that screened eligibles received more intensive care when hospitalized than did unscreened children.

Dental Procedures and Optical Visits - Findings

Screened members of the study sample used 11 percent more dental procedures and 30 percent more optical service visits than did those without screening. Both non-white strata show this general pattern of higher optical and dental service use among screened than among unscreened eligibles. In the white strata, those with screening were relatively heavy users of optical care but low users of dental care. Non-whites in both the screened and unscreened groups used more dental services than did their white counterparts.

Analysis

The relatively heavy use of optical and dental care by the screened population is to be expected, since EPSDT screening places a strong emphasis on detecting dental and vision problems which are non-acute but require treatment. It is apparent from these data that EPSDT is detecting these problems and that its referrals to treatment are effective in securing needed care for screened eligibles.

The relatively low use of dental services by white screened eligibles is not readily explained, but it suggests that either screening in these groups is not being effectively performed or that whites in State 2 have generally adequate dental health maintenance patterns even in the absence of screening.

Other Service Units - Findings

Screened eligibles in State 2 used 23 percent more other service units than did unscreened eligibles. Only in the other 7-21 stratum did screened eligibles use fewer of these services than did eligibles without screening.

Analysis

Analysis of differences in service use patterns between screened and unscreened eligibles in this service category is difficult because the services represented are very heterogeneous. We have included curative services such as nursing home days and podiatrist visits here, together with diagnostic services such as psychological testing, independent laboratory testing, restorative services such as the purchase of prosthetic devices; and episodic care services such as ambulance trips.

The data suggest that EPSDT has induced an intensified use of other services in State 2. Since these services are often diagnostic or restorative, we suspect that this may, like the dental and optical service data, reflect an EPSDT influence in promoting service for chronic non-acute health impairments. The internal evidence in the data in support of this contention is, however, weak.*

Comparison of the Utilization Findings in States 1 and 2

Table 2.5 presents a summary of the apparent impacts on the utilization per capita of medical services for the two states in this study. In examining this table we find that screened eligibles used fewer ambulatory general medical services and prescribed drugs in both States than did unscreened eligibles; that the use of hospital days declined after screening in both States but that the use of complementary other physician services rose in State 1 while falling in State 2; that EPSDT screened eligibles used fewer other service units than their unscreened counterparts in State 1 but more such units than did the unscreened in State 2. We also note that the number of physician other visits (largely for in hospital services) per patient day of hospitalization was sharply higher for screened as compared with unscreened eligibles in both States.

*The findings in State 1 are opposite to those in State 2.

TABLE 2.5: COMPARISON OF THE UTILIZATION FINDINGS IN STATE 1 AND 2: THE PERCENTAGE DIFFERENCE BETWEEN UTILIZATION BY SCREENED AND UNSCREENED MEMBERS OF THE STUDY SAMPLE*

| SERVICES | STATE 1 | STATE 2 |
|---|---|---|
| a. Physician Office Visits | -25% | -7% |
| b. Pharmaceutical Prescriptions | -24 | -5 |
| c. Dental Procedures | 34 | 11 |
| d. Outpatient Hospital Visits | 11 | -17 |
| e. Physician Other Visits | 98 | -26 |
| f. Clinic Visits | 90 | 19 |
| g. Inpatient Hospital Days | -12 | -55 |
| h. Physician Emergency Visits | 357 | -27 |
| i. Optical Service Visits | 29 | 30 |
| j. Other Service Units | -79 | 23 |
| k. General Medical Outpatient Visits (a+d+f+h) | -8 | -9 |
| l. Physician Other Visits per Inpatient Day (e/f) | 119** | 60** |

*A minus sign (-) preceding a value in this table indicates that screened eligibles had a lower service utilization rate than did unscreened eligibles. Where no minus sign appears, utilization by those screened was higher than that by those without screening.

**In State 1, 1.62 other physician visits were recorded per patient day for those with screening and .74 visits per patient day for those without screening. The comparable values in State 2 were .64 and .40.

The basic patterns of EPSDT impact on service utilization in both States were similar. In both States ambulatory care and inpatient care use were reduced while the use of optical and dental services increased. However, the decline in the use of hospital services was not sharp enough in State 1 to support a contention that EPSDT shifts the focus of care away from general medical inpatient settings and toward general medical outpatient settings.

The contrasts between the two States on an individual service category basis are most pronounced in the case of outpatient hospital services, physician other visits, physician emergency visits, and clinic visits. In all but the last case screening seems to have increased utilization in one State and to have decreased it in the other. In the case of clinics, EPSDT seems to have caused only a moderate utilization increase in State 2 while causing a pronounced utilization increase in State 1.

As we have shown in comparing utilization of all general medical outpatient services between the States, the contrasting results in the areas of clinic, hospital outpatient and emergency services do not imply that the EPSDT programs have different impacts on overall outpatient care utilization in these two environments. What we do find is that the State which uses public health clinics as screening providers to the exclusion of all other potential sources of screening services (State 1) seems to induce those who are screened to use public and other institutional settings for primary care with some frequency. In State 2, where private practitioners carry out much of the screening activity, the only EPSDT-induced increase in care in institutional outpatient settings occurs in clinics and these clinics, as we know because of the existence of the Maternal and Child Health Programs, may be particularly well-equipped to treat certain disorders in young children.

One final aspect of the findings should be noted. Except in the categories of dental procedures and physician other visits, eligibles in State 1, whether screened or unscreened, use fewer medical services than do their counterparts in State 2. This may be due to the fact that State 1 is rural and State 2 is urban but whatever the cause, it is clear that there is less scope for EPSDT to reduce "unnecessary" service use in State 1 than in State 2 and that achievement of optional and equivalent service use patterns in the two States may simultaneously call for increased service use in State 1 and decreased use in State 2.

## SECTION III: IMPACT OF EPSDT ON EXPENDITURES FOR MEDICAL SERVICES UNDER MEDICAID

*Medicaid provides payment for covered medical services received by eligible persons. Since screening was shown to affect utilization of services, it can be expected that it will also affect costs. We assessed the direction, magnitude, and cause of cost changes for each covered service by making a service-by-service expenditure comparison for screened and unscreened members of our sample populations in two States. These comparisons are based on service costs alone and exclude the expenditures associated with screening. The expenditure difference found between screened and unscreened persons was defined as the medical service expenditure impact of EPSDT.*

*Findings showed that the expenditure differences between screened and unscreened eligibles followed the same pattern as utilization differences with the exception of one service category (physician office visits) in State 1. In both States, expenditures for screened persons were lower for pharmaceutical prescriptions and inpatient hospital days than for unscreened persons. In both States, expenditures for screened persons were higher for dental procedures, clinic visits, and optical services than for unscreened persons. In several medical service categories, screened persons had higher expenditures in one State and lower expenditures in the other State in comparison with unscreened persons in the same state. These medical service categories were physician office visits, outpatient hospital visits, physician other visits, physician emergency visits, and other service units.*

*In aggregate, it was found that EPSDT reduced Medicaid medical service costs only in highly urbanized State 2. Medical services costs in State 2 were reduced $46,885 for the screened sample population. In the relatively rural State 1, EPSDT increased medical services costs $9,096 for the screened sample population. On a per capita basis, screened persons expended $195.22*

*and unscreened eligibles expended $253.83 in State 2. In State 1, screened persons had medical service expenditures of $155.70 per capita, and unscreened eligibles had $144.33 in medical service expenditures per capita.*

*These findings suggest that while EPSDT may uniformly encourage the development of appropriate patterns of medical care use it may not always bring about a decline in Medicaid medical service expenses in the short-run. This appears to be due to the existence of substantial overutilization of certain types of services by those without screening in the highly urban State and the absence of any service sector with substantial overutilization among unscreened eligibles in the more rural State.*

Service Definitions

In order to clarify the presentation which follows, we first define the service categories used in the analysis and the kinds of billing definitions used to count units of service. These definitions have already been presented at the outset of Section II and are repeated here for the convenience of the reader. The service types are as follows:

- Physician Office Visit - four types of services are included in this category: physician office visits, physician billed x-ray procedures, physician billed laboratory procedures, and physician billed injections. When more than one of these service types is provided by a single physician to one patient on the same day and one of these services is an office visit, only the office visit is counted as a utilization unit. When no office visit is recorded but other services included in this category are performed, all of those services performed on one date are considered to be part of one office visit.
- Pharmaceutical Prescriptions - new and refilled prescriptions. Each prescription is counted as a service unit whether or not the medications have been ordered on a single prescription.
- Dental Procedures - individual dental procedures such as x-ray, extractions, filled cavities and dental education sessions.

- Outpatient Hospital Visits - individual visits to hospital outpatient departments. As in the case of physician office visits, all procedures billed separately by the hospital on the date of the outpatient visit are considered to be elements of that visit and are not separately enumerated. However, where x-rays, laboratory procedures, and injections are billed to Medicaid by individual physicians they have been recorded as physician office visit components even when we suspect that they were parts of the outpatient hospital visit encounter. Certain other individual physician billed procedures which may have been associated with a hospital outpatient department visit have been recorded as Physician Other Visits as we cannot be certain that they indeed were associated with hospital outpatient visits.

- Physician Other Visits - individual physicians' services except physicians' office emergency care and ophthalmologists' services. When a physician service is performed during a period of hospitalization, regardless of the procedure, it is considered a physician other visit. The vast majority of physician other visits, in fact, do occur during hospitalization.

- Clinic Visits - clinic services provided to one patient on one day but not billed as a physician visit.

- Inpatient Hospital Days - hospital days billed to Medicaid (admission date substracted from discharge date).

- Physician Emergency Visits - visits billed by physicians for emergency care largely in hospital emergency rooms

- Optometric Service Visits - services performed on a single day by one provider for one patient and billed to Medicaid as having been for eye services. We have grouped the services of ophthalmologists, optometrists, opticians, and corporate providers of vision services in this category.

- Other Service Units - a general category that contains ambulance trips, prosthetic devices, nursing home days, laboratory services billed by independent laboratories, and other services which are not included in the other nine service categories.

## Medicaid Medical Service Expenditures in State 1

Medicaid medical service expenditures (exclusive of screening reimbursements) for the sample population in State 1 are presented in Table 3.1 by age/race stratum, screening status, and medical service category. Average expenditures for members of this sample population are shown in Table 3.2. As total expenditures will differ between unscreened and screened members of the sample exactly as utilization differs unless the unit cost of service to the two groups is not the same, we have also prepared Table 3.3 for analytic use. This table shows the percentage difference between utilization rates, expenditures per person, and the unit cost of services received for each medical service between the screened and unscreened members of the sample population. The use of the table can be illustrated by reference to the physician office visit column which shows that screened members of the sample used 25 percent fewer visits, incurred costs per capita three percent greater, and used physician office visits whose unit cost was 37 percent greater than the comparable experience of the unscreened sample population in State 1.

In presenting the expenditure findings, we follow the source format which was used in the discussion of utilization. Services are divided into the five broad categories. One of these is general medical outpatient visits, and it comprises physician office visits, physician emergency visits, hospital outpatient department visits, and clinic visits. A second group is comprised of inpatient care-related activities: hospital inpatient days and physician other visits. The third group consists of the dental and optical services to which referrals are emphasized within the EPSDT program. The fourth group consists only of pharmaceutical prescriptions. The final category includes only the heterogeneous other service unit category.

TABLE 3.1: MEDICAID EXPENDITURES FOR THE SAMPLE POPULATION IN STATE 1, BY AGE/RACE STRATUM, SCREENING STATUS, AND SERVICE TYPE: MARCH 1, 1975 - FEBRUARY 29, 1976

| RECIPIENT GROUP | SCREENED | SERVICES | | | | | | | | | | SAMPLE | TOTALS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Physician Office Visits | Pharmaceutical Prescriptions | Dental Procedures | Outpatient Hospital Visits | Physician Other Visits | Clinic Visits | Inpatient Hospital Days | Physician Emergency Visits | Optical Service Visits | Other Service Units | | |
| WHITE | YES | $ 858 | $ 304 | $ 270 | $ 1,421 | $ 488 | $ 234 | $ 871 | $ 18 | $ 27 | $ 73 | 37 | $ 4,564 |
| AGED 0-6 | NO | $ 929 | $ 345 | $ 292 | $ 327 | $ 500 | $ 79 | $ 732 | $ 9 | $ 86 | $ 0 | 37 | $ 3,299 |
| WHITE | YES | $ 4,174 | $1,058 | $ 7,181 | $ 3,167 | $ 3,223 | $ 932 | $ 2,554 | $ 76 | $ 642 | $ 531 | 131 | $ 23,538 |
| AGED 7-21 | NO | $ 2,852 | $1,018 | $ 4,866 | $ 2,608 | $ 1,392 | $ 799 | $ 2,651 | $ 0 | $ 163 | $ 23 | 131 | $ 16,372 |
| OTHER | YES | $ 2,055 | $ 942 | $ 766 | $ 1,756 | $ 1,092 | $ 534 | $ 1,257 | $ 20 | $ 169 | $ 0 | 77 | $ 8,591 |
| AGED 0-6 | NO | $ 2,957 | $ 989 | $ 294 | $ 477 | $ 1,265 | $ 34 | $ 3,663 | $ 9 | $ 0 | $ 0 | 77 | $ 9,688 |
| OTHER | YES | $10,260 | $5,109 | $25,514 | $ 9,697 | $10,481 | $2,336 | $21,248 | $288 | $2,725 | $ 206 | 555 | $ 87,864 |
| AGED 7-21 | NO | $10,119 | $5,234 | $21,094 | $ 8,125 | $ 7,044 | $1,556 | $27,588 | $ 58 | $1,822 | $3,462 | 555 | $ 86,102 |
| TOTALS | YES | $17,347 | $7,413 | $33,731 | $16,041 | $15,284 | $4,036 | $25,930 | $402 | $3,563 | $ 810 | 800 | $124,557 |
| | NO | $16,857 | $7,586 | $26,546 | $11,537 | $10,201 | $2,468 | $34,634 | $ 76 | $2,071 | $3,485 | 800 | $115,461 |

TABLE 3.2: PER CAPITA MEDICAID EXPENDITURES FOR THE SAMPLE POPULATION IN STATE 1, BY AGE/RACE STRATUM, SCREENING STATUS, AND SERVICE TYPE: MARCH 1, 1975 - FEBRUARY 29, 1976

| RECIPIENT GROUP | SCREENED | SERVICES | | | | | | | | | | SAMPLE | TOTALS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Physician Office Visits | Pharmaceutical Prescriptions | Dental Procedures | Outpatient Hospital Visits | Physician Other Visits | Clinic Visits | Inpatient Hospital Days | Physician Emergency Visits | Optical Service Visits | Other Service Units | | |
| WHITE AGED 0-6 | YES | $ 23.19 | $ 8.22 | $ 7.30 | $ 38.41 | $13.19 | $ 6.32 | $ 23.54 | $ .48 | $ .73 | $1.97 | 37 | $123.35 |
| | NO | $ 25.11 | $ 9.32 | $ 7.89 | $ 8.84 | $13.51 | $ 2.14 | $ 19.78 | $ .24 | $ 2.33 | $ .00 | 37 | $ 89.16 |
| WHITE AGED 7-21 | YES | $ 31.86 | $ 8.08 | $ 54.82 | $ 24.18 | $24.60 | $ 7.11 | $ 19.50 | $ .58 | $ 4.90 | $4.05 | 131 | $179.68 |
| | NO | $ 21.77 | $ 7.77 | $ 37.15 | $ 19.91 | $10.63 | $ 6.10 | $ 20.24 | $ .00 | $ 1.24 | $ .17 | 131 | $124.98 |
| OTHER AGED 0-6 | YES | $ 26.69 | $12.23 | $ 9.95 | $ 22.81 | $14.18 | $ 6.94 | $ 16.32 | $ .26 | $ 2.19 | $ .00 | 77 | $111.57 |
| | NO | $ 38.40 | $12.84 | $ 3.82 | $ 6.20 | $16.43 | $ .44 | $ 47.57 | $ .12 | $ .00 | $ .00 | 77 | $125.82 |
| OTHER AGED 7-21 | YES | $ 18.49 | $ 9.21 | $ 45.97 | $ 17.47 | $18.88 | $ 4.21 | $ 38.28 | $ .52 | $ 4.91 | $ .37 | 555 | $158.31 |
| | NO | $ 18.23 | $ 9.43 | $ 38.01 | $ 14.64 | $12.69 | $ 2.80 | $ 49.71 | $ .11 | $ 5.28 | $6.24 | 555 | $155.14 |
| TOTALS | YES | $ 21.69 | $ 9.27 | $ 42.16 | $ 20.05 | $19.11 | $ 5.05 | $ 32.41 | $ .50 | $ 4.45 | $1.01 | 800 | $155.70 |
| | NO | $ 21.07 | $ 9.48 | $ 33.18 | $ 14.42 | $12.75 | $ 3.09 | $ 43.29 | $ .10 | $ 2.59 | $1.56 | 800 | $144.33 |

TABLE 3.3: PERCENTAGE DIFFERENCE IN UTILIZATION/CAPITA, COST/CAPITA, AND COST PER UNIT OF SERVICE BETWEEN EPSDT SAMPLE POPULATION AND NON-EPSDT SAMPLE POPULATION - STATE 1

| DATA GROUP | SERVICES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Physician Office Visits | Pharma-ceutical Prescrip-tions | Dental Procedures | Outpatient Hospital Visits | Physician Other Visits | Clinic Visits | Inpatient Hospital Days | Physician Emergency Visits | Optical Service Visits | Other Service Units |
| UTILIZATION/ CAPITA | -25% | -24% | 34% | 11% | 98% | 90% | -12% | 357% | 29% | -79% |
| COST/CAPITA | 3% | -2% | 27% | 39% | 50% | 64% | -25% | 429% | 72% | -77% |
| COST/UNIT OF SERVICE | 37% | 29% | -5% | 25% | -24% | -14% | -17% | 16% | 34% | 12% |

General Medical Outpatient Services - Findings

Aggregate and per capita expenditures for general medical outpatient services were 22 percent greater for those screened than for unscreened eligibles. A pattern of relatively greater expenditures for these services for screened persons is found in each of the service subcategories in this group. Though it is pronounced only in outpatient hospital visits, clinic visits, and physician emergency visits, this general pattern of expenditure findings with respect to general medical outpatient services is repeated in each stratum with few exceptions. In particular, the relatively high physician office visit expenditures incurred by screened whites, ages 7-21, and the relatively low physician office visit expenditures incurred by screened other persons, ages 0-6, are notable. Also notable is the tendency of whites and of the younger screened groups in each racial grouping to show larger expenditure increments when compared with their unscreened counterparts than do the older screened groups. The percentage overall increases in general medical outpatient costs after screening were 88 percent in the white 0-6 stratum, 33 percent in the white 7-21 stratum, 26 percent in the other 0-6 stratum, and 14 percent in the other 7-21 stratum.

In looking at the cost per unit of service in general medical outpatient services, it is apparent from Table 3.3 that EPSDT recipients used more costly services than unscreened eligibles in each category in this group except clinic visits. Overall, the cost per outpatient visit was 34 percent higher for screened than for unscreened eligibles. ($18.87 as compared with $14.12).

Analysis

The finding that screened eligibles incur 22 percent greater expenditures for general outpatient care than do their unscreened counterparts, contrasts sharply with the finding that utilization

of these services is 8 percent less for the screened than for the unscreened. This contrast in findings is due to the fact that screened persons visits have a higher unit cost in each setting than do the visits of unscreened eligibles, and because there is a tendency among those screened to shift the focus of outpatient care from relatively inexpensive office settings to more expensive outpatient hospital settings. The unit cost for screened persons' hospital outpatient department visits was $36.62.

The relatively high cost of outpatient visits among those with screening suggests that these services are different in kind (or content) from those received by unscreened eligibles. The nature of this difference in service content (if any) is not clear to us from the data at hand, but it may be due to referrals by EPSDT to relatively high cost specialists and to an impetus given by EPSDT to more thorough and costly diagnostic workups than are normally provided in the course of the everyday practice of providers in State 1. The second of these effects is an intended result of EPSDT and it is reassuring to see that the evidence suggests that providers do follow through on the findings of screening providers.

Pharmaceutical Prescriptions - Findings

Pharmaceutical expenditures were 2 percent less for screened than for unscreened eligibles in State 2 and the unit cost per prescription drug was 29 percent higher for those with screening than for those in the comparison group. The pattern of lower expenditures for drugs by screened than by unscreened persons is repeated in each stratum except for whites ages 7-21. The pattern of relatively high per prescription costs among those with screening is evident only in the non-white strata and is reversed among whites in both age groups.

Analysis

As in the analysis of prescription utilization findings we note here that the relatively heavy use of clinic and outpatient hospital department settings among those with screening in State 1 probably distorts our findings with respect to pharmaceuticals because institutional providers of outpatient care dispense drugs as part of the visit service (and billing) more often than do physicians in office based practice. Thus we suspect that the drug expenditures comparison considerably understates comparable prescription costs in the unscreened as compared with the screened sample and particularly in the age 0-6 strata.

Given this, the principal finding here is that the cost per prescription drug used is 29 percent higher overall among screened than among unscreened persons, that it is 46 percent higher among screened than among unscreened non-whites ages 7-21, 15 percent higher among screened than among unscreened non-whites ages 0-6, and 6 percent lower among screened than among unscreened whites in both age groups. The overall excess in cost per prescription costs among those with screening suggests that screened eligibles tend to be given newer (more recently developed and hence more expensive) products than unscreened eligibles or that they receive larger quantities per refill. This kind of pattern cannot be substantiated from the data at hand though, and its absence among whites and in State 2 suggests that we may have misinterpreted the significance of this finding. Clearly, further study is needed if this finding is to be properly and fully explained.

Inpatient Care and Related Activities - Findings

The screened population in State 1 incurred expenses for inpatient days 25 percent lower than those incurred by the unscreened population. Expenses for physician other visits were 50 percent higher among those with screening than among those without screening. Physician other visit expenses per inpatient day were $56.19 for screened persons and $33.67 for unscreened persons.

Total expenditures per inpatient (including the cost of physician other visits) were very much the same for screened ($151.52) and unscreened ($147.47) eligibles,

Total expenditures on inpatient and related care were 8 percent lower among screened than among unscreened persons.

Analysis

Total expenditures on inpatient care per screened eligibles were eight percent less than those for unscreened eligibles, while utilization was 12 percent less. Thus it appears that the overall content (or service intensity) of hospital care is much the same per patient day for screened as for unscreened eligibles, and that EPSDT lowers hospitalization costs merely by reducing days of care used. On a more disaggregated level, it is clear that there is somewhat less costly and probably less intensive hospital care being provided to the screened, and that increased intensity of physician use compensates for this.

In comparing changes in total hospitalization expenses with total general medical outpatient costs, it is apparent that EPSDT shifts the emphasis in spending away from inpatient and toward outpatient care. This shift conforms with what is to be expected when the program succeeds in "chang(ing) the utilization of health care resources from crisis - only care to less costly and more effective health maintenance encounters."*

*Social and Rehabilitation Service Forward Plan, 1976, p. 2 of the chapter on EPSDT. Of course, we have not shown that EPSDT reduces medical expenditures in State 1 but only that care is shifted to lower unit cost settings.

Dental Procedures and Optical Visits - Findings

The EPSDT screened sample incurred 27 percent greater expenditures for dental services and 72 percent greater expenditures for optical visits than did their non-screened counterparts. Dental unit service costs were only five percent different in the screened group than what they were in the unscreened group. In the case of optical visits, unit costs were 34 percent higher for screened than for unscreened persons. The older strata (ages 7-21) generally incurred higher expenditures for the services than did the younger strata regardless of screening status, and this phenomenon was particularly marked in the case of dental procedures.

Analysis

Most of the findings on per capita dental and optical expenses closely parallel those on utilization, and no further comments on those are needed. The only important exception to this rule is in the area of optical services where expenditure increases caused by EPSDT (72 percent) far outstrip the utilization increases (29 percent) in service utilization. This difference in findings is related in the fact that unit service costs for optical visits were much higher (34 percent) among screened than among unscreened persons.

The optical findings suggest that the quality or content of the services provided to screened people is different from that provided to the unscreened. These differences may reflect a relatively heavy use of ophthalmologists by screened eligibles and a relatively heavy reliance on optometrists by those without screening. It may also indicate that more complex diagnostic and therapeutic work is done for screened than for unscreened eligibles.

Other Service Units - Findings

Expenditures for other service units were sharply lower (77 percent) for screened than for unscreened eligibles in State 1 though on a stratum by stratum basis it is clear that EPSDT decreased

these expenses only in the other 7-21 stratum while it appears to have increased such expenses for whites regardless of age. The unit service cost for other services was somewhat (12 percent) higher for screened than for unscreened eligibles.

Analysis

Other service units expenditures are difficult to analyze because the units of account are very heterogeneous. All that can be said with any confidence is that service content (as reflected in unit price) is only modestly different for screened and unscreened persons after account is taken of the influence of service unit heterogeneity on these findings.

Those findings suggest that the kinds of infrequently used prosthetic devices, tests (e.g., lab and psychological) and other services (e.g., lab and psychological) and other services (e.g., ambulance, nursing home, podiatrist) included here are deemphasized among those with screening and we are at a loss to explain why this should be the case.

Medicaid Medical Service Expenditures in State 2

Medicaid medical service expenditures (exclusive of screening reimbursements) for the sample population in State 2 are shown in Table 3.4 by age/race stratum, screening status, and medical service category. Average expenditures for members of the sample population are shown in Table 3.5. As total expenditures will differ between screened and unscreened members of the sample population exactly as utilization differs between these groups (unless unit service costs are different for screened and unscreened eligibles), we have also prepared Table 3.6. This table shows the percentage differences in utilization, expenditure, and cost per unit of service between screened and unscreened eilgibles for the whole sample.

TABLE 3.4: MEDICAID EXPENDITURES FOR THE SAMPLE POPULATION IN STATE 2, BY AGE/RACE STRATUM, SCREENING STATUS, AND SERVICE TYPE: MARCH 1, 1975 - FEBRUARY 29, 1976

| RECIPIENT GROUP | SCREENED | SERVICES | | | | | | | | | | SAMPLE | TOTALS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Physician Office Visits | Pharmaceutical Prescriptions | Dental Procedures | Outpatient Hospital Visits | Physician Other Visits | Clinic Visits | Inpatient Hospital Days | Physician Emergency Visits | Optical Service Visits | Other Service Units | | |
| WHITE AGED 0-6 | YES | $ 4,280 | $ 2,171 | $ 720 | $ 3,108 | $ 779 | $ 284 | $ 5,700 | $146 | $ 199 | $ 302 | 81 | $ 17,689 |
| | NO | $ 5,694 | $ 1,791 | $ 879 | $ 2,370 | $ 797 | $ 41 | $ 4,810 | $242 | $ 316 | $ 224 | 81 | $ 17,164 |
| WHITE AGED 7-21 | YES | $ 8,475 | $ 3,653 | $ 6,845 | $ 4,664 | $ 2,999 | $ 0[1] | $ 6,836 | $158 | $1,309 | $1,317 | 173 | $ 36,256 |
| | NO | $ 6,266 | $ 3,180 | $ 6,574 | $ 6,323 | $ 1,337 | $1,153 | $ 4,760 | $226 | $ 775 | $1,567 | 173 | $ 32,161 |
| OTHER AGED 0-6 | YES | $ 5,906 | $ 3,882 | $ 1,345 | $ 5,563 | $ 1,986 | $1,260 | $14,669 | $ 97 | $ 420 | $1,614 | 179 | $ 36,742 |
| | NO | $ 9,858 | $ 5,405 | $ 1,195 | $ 6,014 | $ 2,239 | $ 705 | $22,001 | $ 76 | $ 242 | $1,620 | 179 | $ 49,355 |
| OTHER AGED 7-21 | YES | $13,190 | $ 6,366 | $13,925 | $ 9,830 | $ 3,158 | $3,511 | $ 7,398 | $215 | $2,443 | $5,452 | 367 | $ 65,488 |
| | NO | $10,919 | $ 6,457 | $10,474 | $11,036 | $ 7,440 | $1,228 | $51,012 | $192 | $1,901 | $3,721 | 367 | $104,380 |
| TOTALS | YES | $31,851 | $16,072 | $22,835 | $23,165 | $ 8,922 | $5,055 | $34,603 | $616 | $4,371 | $8,685 | 800 | $156,175 |
| | NO | $32,737 | $16,833 | $19,122 | $25,743 | $11,813 | $3,127 | $82,583 | $756 | $3,234 | $7,132 | 800 | $205,060 |

1/ The procedure for backing out expenses related to screening examinations was inexact in that not all sample member screening examinations in State 1 were compensated for by Medicaid at the assumed rates of payment; some screened persons received more than one examination; and screenings in each stratum were not shared 84 percent by private practitioners, 12 percent by hospitals, and 4 percent by clinics as they were for all strata combined. Thus in some strata we have understated (as in this case) actual clinic care costs or other care costs while overstating them in other strata. Most of the errors cancel out in the summary figures at the bottom of the table. We have no data which would permit us to improve the accuracy of the stratum by stratum estimates.

TABLE 3.5: PER PERSON MEDICAID EXPENDITURES FOR A SAMPLE OF 1600 SCREENED AND UNSCREENED CHILDREN (AGED 0-21) IN STATE 2, BY AGE/RACE STRATUM, SCREENING STATUS, AND SERVICE TYPE - PER CAPITA: MARCH 1, 1975 - FEBRUARY 29, 1976

| RECIPIENT GROUP | SCREENED | SERVICES | | | | | | | | | | SAMPLE | TOTALS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Physician Office Visits | Pharmaceutical Prescriptions | Dental Procedures | Outpatient Hospital Visits | Physician Other Visits | Clinic Visits | Inpatient Hospital Days | Physician Emergency Visits | Optical Service Visits | Other Service Units | | |
| WHITE AGED 0-6 | YES | $ 52.84 | $26.80 | $ 8.89 | $ 38.37 | $ 9.62 | $ 3.50 | $ 70.37 | $1.80 | $ 2.46 | $ 3.73 | 81 | $218.38 |
| | NO | $ 70.30 | $22.11 | $10.85 | $ 29.26 | $ 9.84 | $ .50 | $ 59.38 | $2.99 | $ 3.90 | $ 2.77 | 81 | $211.90 |
| WHITE AGED 7-21 | YES | $ 48.99 | $21.11 | $39.57 | $ 26.96 | $17.34 | $ .00 | $ 39.51 | $ .91 | $ 7.57 | $ 7.61 | 175 | $209.57 |
| | NO | $ 36.22 | $18.38 | $38.00 | $ 36.55 | $ 7.73 | $ 6.66 | $ 27.51 | $1.31 | $ 4.48 | $ 9.06 | 179 | $185.90 |
| OTHER AGED 0-6 | YES | $ 32.99 | $21.69 | $ 7.51 | $ 31.08 | $11.09 | $ 7.04 | $ 81.95 | $ .54 | $ 2.35 | $ 9.02 | 179 | $205.26 |
| | NO | $ 55.07 | $30.20 | $ 6.68 | $ 33.60 | $12.51 | $ 3.94 | $122.91 | $ .42 | $ 1.35 | $ 9.05 | 179 | $275.73 |
| OTHER AGED 7-21 | YES | $ 35.94 | $17.35 | $37.94 | $ 26.78 | $ 8.60 | $ 9.57 | $ 20.16 | $ .59 | $ 6.66 | $14.85 | 367 | $178.44 |
| | NO | $ 29.75 | $17.59 | $28.54 | $ 30.07 | $20.27 | $ 3.35 | $139.00 | $ .52 | $ 5.18 | $10.14 | 367 | $284.41 |
| TOTALS | YES | $ 39.81 | $20.09 | $28.55 | $ 28.96 | $11.15 | $ 6.32 | $ 43.25 | $ .77 | $ 5.46 | $10.86 | 800 | $195.22 |
| | NO | $ 40.92 | $21.04 | $23.90 | $ 32.18 | $14.77 | $ 3.91 | $103.23 | $ .92 | $ 4.01 | $ 8.92 | 800 | $253.85 |

TABLE 3.6: PERCENTAGE DIFFERENCE IN UTILIZATION/CAPITA, COST/CAPITA, AND COST PER UNIT OF SERVICE BETWEEN EPSDT SAMPLE POPULATION AND NON-EPSDT SAMPLE POPULATION - STATE 2

| DATA GROUP | SERVICES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Physician Office Visits | Pharmaceutical Prescriptions | Dental Procedures | Outpatient Hospital Visits | Physician Other Visits | Clinic Visits | Inpatient Hospital Days | Physician Emergency Visits | Optical Service Visits | Other Service Units |
| UTILIZATION/ CAPITA | -7% | -5% | 11% | -17% | -26% | 19% | -55% | -27% | 30% | 23% |
| COST/CAPITA | -3% | -5% | 19% | -10% | -25% | 62% | -58% | -16% | 35% | 22% |
| COST/UNIT OF SERVICE | 4% | 0% | 7% | 8% | 1% | 36% | -7% | 15% | 4% | -1% |

The discussion of expenditures is organized into separate presentations of findings and analyses of findings for each of four groups of services. These groups are general medical outpatient services which includes physician office visits, prescriptions, outpatient hospital visits, clinic visits and emergency physician visits; prescriptions; inpatient related services including hospital inpatient days and physician other visits; dental and optical services; and other service units.

General Medical Outpatient Services - Findings

Aggregate and per capita expenditures for general medical outpatient services were 3 percent less for screened than for unscreened eligibles. The other race group deviated from the general pattern in that expenditures were higher (by 14 percent) for screened than for unscreened members of the other 7-21 stratum and sharply lower (25 percent) for screened than for unscreened members of the other 0-6 stratum. Expenditures per visit (prescriptions excluded) were 6 percent ($1.11) higher for screened than for unscreened members of the sample though cost per unit of service rose much more sharply than this in the wake of screening for the infrequently used clinic and emergency visits (37 percent and 15 percent higher unit costs respectively after screening).

Analysis

The cost findings follow the pattern of the utilization findings very closely as there is little difference in the unit cost of service between screened and unscreened groups. The small difference in the unit costs partly reflects the relatively heavy emphasis of screened persons on the use of clinic services which had a unit cost of $33.92 for screened persons as compared with the $13.13 unit cost of physician office visits for those people. The remainder of the unit cost difference may be due to a slightly greater intensity of service for screened than for unscreened eligibles in the sample, but it can equally well be due to the sampling variability of estimated costs and utilization.

The findings in the separate strata with respect to expenditures reflect differences in the utilization and cost/unit effects of EPSDT at this micro-analytic level. We have no basis upon which to determine the cause of these differences, but it is worth noting that the sharply lower expenses of others ages 0-6 after screening are more closely related to differences in the EPSDT impact on sharply reducing cost per unit of service for this group than they are to the utilization impact of the program. The expenditure increase in the other 7-21 group after screening is also closely tied to apparent EPSDT impacts on the unit cost of service, but in this stratum, unlike the case in the other 0-6 stratum, EPSDT appears to have sharply raised the unit cost of service.

Pharmaceutical Prescriptions - Findings

EPSDT appears to have reduced pharmaceutical expenses by 5 percent or by the same percentage by which utilization was reduced. Cost per prescription was virtually identical in the two groups in State 2. Stratum by stratum deviations from the overall findings in this section mirror the results of the utilization analysis.

Analysis

The expenditures data on pharmaceutical prescriptions in State 2 suggest that the content of drug therapy is much the same for screened and unscreened eligibles in State 2 and that the modest total expenditure differences shown are a direct reflection of differences in provider utilization (and the opportunity to receive prescriptions) between these two groups of Medicaid eligibles.

Inpatient and Related Services - Findings

The total expenditure for hospital inpatient days and physician other visits was 54 percent less for screened than for unscreened eligibles in State 2. Hospital costs taken separately declined by 58 percent and physician other visit costs declined by 25 percent as a result of EPSDT screening. Cost per unit of service for both components of total hospitalization expenses were much the

same for the screened and unscreened groups. The $138.61 total cost of these services per patient day for screened eligibles was almost identical to the $136.02 cost per patient day for unscreened eligibles.

A stratum by stratum review of the data reveals only one major pattern breaking phenomenon,* a very high cost of service for unscreened non-whites and for screened non-whites ages 7-21. Total hospital-related expenditures for screened non-whites, ages 0-6, were 31 percent less than those for the controls, while in the non-white 7-21 stratum, screened eligibles incurred costs 82 percent below those of the controls. Total cost per day in each of those groups was in a range of $140.93 to $147.98 except in the case of screened non-whites, ages 7-21, where per diem costs were $173.05.

Analysis

The pattern of expenditure findings follows that of the utilization findings very closely in this group of services. One can do no more than reiterate the conclusion that EPSDT strongly shifted the emphasis from inpatient to outpatient care in State 2. However, the expenditure findings, which appear to reflect a slightly greater degree of service intensity for screened than for unscreened eligibles in outpatient settings, make this point even more strongly than do the utilization findings. One last point of interest here is that these results show that the total cost of hospital service per patient day is no greater in the urban State 2 than in the rural State 1, even though the hospital expense per patient day itself is higher in the more urban state. This is because more complementary other physician services are used for each patient day of care in State 1 than in State 2.

* The physician other visit results on whites, ages 7-21, are also unusual, but they may be due to one or two patients with extraordinarily complex surgical requirements or to a chance concentration of non-hospital other visits in this stratum and not be part of a pattern.

Dental and Optical Services - Findings

Expenditures for dental procedures were 19 percent higher and expenditures for optical visits were 35 percent higher for screened than for unscreened eligibles in the sample. Cost per dental procedure and optical visit was slightly higher (eight percent and four percent) among screened than among unscreened eligibles.

Analysis

The pattern of these findings repeats those of the utilization findings almost identically. It suffices to note here that EPSDT does not appear to induce any substantial change in the quality or intensity (as measured by unit cost) of services used, but merely seems to induce an increase in the volume of services used. Expenditures and utilization were particularly high, and strongly augmented by EPSDT, in the older age groups.

Other Service Units - Findings

Expenditures for other service units were 22 percent higher in the screened than in the unscreened group while the cost per unit of service was virtually identical in these two groups.

Analysis

The lack of any meaningful difference in the unit cost of other services between the screened and unscreened groups implies that the other services procured by each group were similar. The analysis here can therefore not extend beyond that provided in Section II. As indicated there, higher utilization of (and expenditures for) other services among those with screening may reflect an EPSDT inducement to use prostheses and unusual diagnostic or treatment services. As the evidence in State 1 powerfully contradicts that in State 2, it is probably best to withold speculation on the causes of a relatively high other service use among the screened in State 2 until additional studies have been completed which probe this question in depth.

Comparison of State 1 and State 2 Expenditure - Findings

The general patterns of the expenditure findings in the two States are similar as a comparison of Tables 3.3 and 3.6 illustrates. In reviewing the contents of these tables it is apparent that EPSDT leads to declines in the utilization and cost of pharmaceuticals, and hospital days in both States and to increases in dental procedures and costs, clinic visits and costs and optical service visits and costs in both States. Further the analysis has shown that though outpatient costs increase in one State and fall in the other in the aftermath of screening, in both States there is a shift from inpatient to outpatient care. In State 1, where outpatient costs rise moderately, there is a moderate decline in inpatient costs after screening; while in State 2, outpatient costs fall moderately and inpatient costs fall sharply after screening. Further, in both States we note a tendency for EPSDT to increase both the utilization and cost of physician other visits (largely hospital visits) per inpatient hospital day.

The only real conflicts between the expenditure findings in the two States occur in the hospital outpatient visit, physician emergency visit, and other service unit expenditure categories. A major source of the difference in expenditure findings for screened as compared with unscreened persons lies in the difference in utilization findings for these two groups. This is especially true in State 2.

The hospital outpatient visit conflict is readily explained by the difference between the institutional structures of screening. In State 1, the exclusive use of public clinics can be expected to increase the proportion of diagnosis and service referrals to other institutions such as hospitals. In State 2 screening is most often done by private practitioners who would not be expected to lean towards referring patients to institutional care settings.

The conflicts in emergency visit and other service unit expenditure findings are no more readily explained than are the underlying conflicts in utilization findings. We must await the findings of further research to explain these results.

One general observation is in order on the differences between the findings in the two States. This is that the costs per unit of service explain very little of the large differences in expenditure levels between the States ($39.52 higher expenditures in State 2 than in State 1 per screened eligibles and $109.50 more in expenditures per unscreened eligibles in State 2 than in State 1). Utilization differences account for the bulk of the expenditure differences.

The fact that the impact of EPSDT is medical service cost increasing in State 1 and medical service cost decreasing in State 2 is not very surprising. EPSDT can reduce costs by reducing the need for service use and by shifting service use to less costly settings. EPSDT, however, also tends to increase service use and costs in certain medical service categories because it stimulates concern about and attention to neglected and chronic health impairments. In an area where utilization and costs are normally high, like State 2, the balance of forces can be expected to lead to cost savings. In a State like State 1, with very low utilization at the outset, there is likely to be very little unnecessary care being given and, by comparison, a large volume of unmet need to be discovered and served.

## SECTION IV: IMPACT OF EPSDT ON LOCAL SITE COSTS

*Local providers and social service agencies incurred administrative and operational costs in providing EPSDT services. These costs were measured by using the Medicaid reimbursement rate per screening for the providers and the Medicaid reimbursement applicable to EPSDT for social service agencies.*

*We found that the Medicaid cost impact of providing EPSDT services at the local level was greater than anticipated except in one instance. The total Medicaid cost impact per screened eligible at the local site level was $130.29 for Site 1, State 1, and $29.09 for Site 2, State 1. In State 2, the local cost impact was $157.22 per screened eligible at Site 3 and $169.20 at Site 4.*

*The Medicaid cost impact of providing case finding and case management services was greater than the cost impact of providing screening at three of the four sites. The Medicaid cost impact of EPSDT social services was $117.39 and $9.09 per screened eligible in State 1 where Medicaid reimbursed the screening providers $12.90 and $20.00 per screened eligible, respectively. In State 2, the social service cost per screened eligible was $137.22 at Site 3 and $144.20 at Site 4, while screening examination provider reimbursement was $20.00 at Site 3 and $25.00 at Site 4.*

*The cost of the EPSDT program can be assessed not only in terms of its Medicaid cost, but also from two other perspectives. Cost can be measured in terms of the total resources utilized in implementing the EPSDT program, or in terms of the additional or incremental resources that local screening providers or social service agencies must add to implement the program beyond their present capabilities. The appropriate cost measure depends on the purpose of the study.*

*We found that each measurement perspective led to a different result. Total local resource costs for social service agencies were slightly greater than their reimbursement. However, total resource costs for screening providers were substantially greater than their reimbursement.*

*While we were not able to accurately measure the incremental cost of providing EPSDT services, our impression is that these costs were high for social service agencies, but quite low for screening providers. For social service agencies, reimbursement and incremental program costs are probably equal but less than total resource costs. In contrast, public screening providers were able to shift existing resources quite easily to EPSDT. One might even find in some locations that reimbursement to screening providers exceeds the cost of resources specifically acquired by these agencies to implement EPSDT. For each of the four screening providers included in this study, however, it is our judgment that the Medicaid cost impact of EPSDT as reported is approximately equal to the incremental program cost.*

Findings

The cost of providing local EPSDT services can be measured in three ways:

- Reimbursement or billings - where the reimbursement rate of the provider for screening and the portion of the Medicaid bill applicable to EPSDT for the local social service agency constitutes the cost of providing EPSDT services. This is the true Medicaid cost impact of EPSDT.
- Total Resource Cost - where those costs actually incurred by the local provider and social service agency in providing EPSDT services are measured. The total resource cost is derived by identifying the labor, material, and overhead cost applicable to the EPSDT program.
- Incremental cost - where the cost of hiring additional staff and purchasing additional supplies and materials to implement EPSDT represent the cost of providing EPSDT services. The incremental cost is less than the total resource cost of EPSDT if screening related activities are added to programs of already operating clinics or agencies with large amounts of fixed resources. These clinics or agencies can then shift resources supported by general revenues or other sources to EPSDT while absorbing only a small amount of additional cost. Incremental costs would equal the total resource cost where EPSDT activities are added to the activities of private providers or agencies which have a minimal amount of fixed resources or which provide services only on a fee-for-service basis.

The Medicaid cost impact of EPSDT (Medical billings generated by EPSDT) at four sites in two States is shown in Table 4.1. These data combine the reimbursement rate of the screening provider with the EPSDT billings of the social service agency to reflect the program's cost impact at those sites.

TABLE 4.1: TOTAL MEDICAID COST IMPACT PER SCREENED ELIGIBLE INCURRED BY LOCAL PROVIDERS AND SOCIAL SERVICE AGENCIES

| Activity \ Location | STATE 1 | | STATE 2 | |
|---|---|---|---|---|
| | Site 1 | Site 2 | Site 3 | Site 4 |
| Social Service Case Finding | 68.48* | 5.51* | 68.61** | 72.10** |
| Social Service Case Follow-up | 48.91* | 3.58* | 68.61** | 72.10** |
| Provider Reimbursement | 12.90*** | 20.00*** | 20.00*** | 25.00*** |
| Total Medicaid Cost Impact Per Screened Eligible | 130.29 | 29.09 | 157.22 | 169.20 |
| TOTAL MEDICAID COST IMPACT | 170,289.03 | 17,744.90 | 55,498.66 | 54,820.80 |
| NUMBER OF SCREENING | 1,307 | 610 | 353 | 324 |

*The cost impact of social service case finding and follow-up in State 1 was measured by allocating a percentage of the local service agency's Medicaid budget to EPSDT. The allocation included both direct and indirect costs. The allocation reflected the judgements of local social service agency personnel.

**The cost impact of social service case finding and follow-up in State 2 was measured by using the local social service agency's approximate bi-weekly bill to EPSDT for direct labor. This amount does not reflect the allocation of indirect costs to EPSDT as done in State 1 nor does it accurately portray the division of staff time between the two functions. Data was not available to determine the exact cost breakdown for the two functions because both social service agencies had just begun implementing intensive EPSDT-related services.

***Three ways exist to measure local provider EPSDT costs: 1) Medicaid cost impact assessment, 2) total resource cost, or 3) incremental program cost assessment. The cost figures used in Table 4.1 represent the Medicaid cost impact of EPSDT per screening encounter. These rates are negotiated rates that do not reflect a final cost settlement. The total resource cost is defined as those costs actually incurred by the local provider in providing EPSDT services. For all sites, the total resource cost was substantially greater than the Medicaid cost impact. Incremental program cost was not measured due to the lack of incremental cost data at each of the sites. We feel, however, that the incremental program cost is no greater than the local provider's reimbursement rate.

In looking at Table 4.1, we see that all social service agencies incurred costs for case finding and case management (follow-up). The cost of providing these services at Site 2 was considerably less than that at the the other three sites. The average social service cost per screened eligible at the four sites was $101.98 with a low of $9.04 at Site 2 and a high of $144.20 at Site 4. The highest subcategory cost per screened eligible was found at Site 4, $72.10, for case finding. The lowest subcategory cost was at Site 2, $3.58, for case follow-up.

Reimbursement rates for screening providers were $25.00 or less at all sites. The difference between the highest and lowest screening provider reimbursement rate was $12.10.

The total cost impact of EPSDT on Medicaid at the local level, combining provider and social service costs, reflects primarily the cost of EPSDT social services. The average cost per screened eligible at the local level was $121.45 (the average social service cost was $101.98). The lowest cost was $20.09 at Site 2 while the highest cost was $169.20 at Site 4.

In addition to measuring the Medicaid cost impact of EPSDT, we also measured the total resource cost of operating the EPSDT program for both social service agencies and screening providers. The total resource cost for social service agencies was slightly higher than their reimbursement.* The total resource cost for screening

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* We found that social service agencies did assign a portion of their direct labor costs to EPSDT in an accurate manner. We suspect though that some indirect labor (supervision) and overhead items (maintenance, operation of plant, etc.) were actually expended for EPSDT but were not accounted for in the estimates provided to us by the agencies.

providers was substantially higher than their reimbursement rate.*

A lack of financial data identifying the incremental costs of implementing the EPSDT program prevented us from accurately measuring this type of cost at any of the four sites. However, we did find in a previous report that most resource costs for the provider were fixed operating costs, and consequently over the short term, the additional (incremental) cost of providing EPSDT screening services was small.** This finding was verified in our more intensive study. It is very likely then that incremental program costs for screening providers do not exceed their reimbursement. In all probability, their incremental program cost is approximately equal to reimbursement. The incremental program cost for social service agencies is also probably equal to their reimbursement but slightly less than the EPSDT total resource cost.

Analysis

The amount billed to EPSDT by local social service agencies was within a range of $115-$122 per screened eligible except at Site 2. The reason for the low cost at Site 2 was basically one of staffing. The social service agency at Site 2 had no full-time personnel working on the EPSDT program. In contrast, the other three social service agencies had a minimum of four full-time EPSDT staff members.

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* We found that the total resource cost for three of the four screening providers to implement EPSDT to be at least double their reimbursement rate. For example, we discovered that two screening providers incurred unreimbursed costs for case finding. Site 1 had a case finding cost per screened eligible of $2.31. Site 4 had a case finding cost of $7.73. All four sites incurred costs for screening which exceeded their reimbursement. The average screening cost per screened eligible was $33.07 with a range of $127.76. Two sites were involved in non-reimbursed case follow-up activities. Case follow-up costs per screened eligible were $7.23 and $7.73 respectively for Site 1 and Site 4. Each site also provided unreimbursed administrative services. The average administration cost per screened eligible was $12.32 with a range of $39.61. The average total resource cost per screened eligible for providers was $52.12 with a range of $173.29. By contrast, the average provider reimbursement was $19.25.

** Applied Management Sciences, Best Practices Report, "Assessment of EPSDT Practices and Costs," Social and Rehabilitation Office, Contract No. SRS-500-75-0019, May 21, 1976.

The difference in cost per screened eligible for the sub-categories of case finding and follow-up was marked in State 1 but not so in State 2. Follow-up costs contributed forty-two and thirty-five percent respectively to the total social service cost in the sites in State 1. Costs were split evenly between case finding and follow-up in both sites in State 2. Since both social service agencies in State 2 had just begun an intensive program to provide EPSDT services, we expect that the cost differential between the two services will approximate that of State 1 over the long term.

Reimbursement for screening providers was significantly lower than that for social service agencies on a per screened eligible basis. Reimbursement rates ranged from $12.90 to $25.00 with Site 2 and 3 reimbursed $20.00 per screened eligible.

Social service agencies accounted for at least eighty percent of the local cost impact of EPSDT except at Site 2. The local social service agency's contribution to Medicaid costs at Site 2 was 31 percent. We note that these costs, though high in relation to provider reimbursements and almost equal to total resource costs for the social service agency EPSDT activity, probably equal the incremental cost of the social service function.

## SECTION V: IMPACT OF EPSDT ON STATE ADMINISTRATIVE COSTS

*State administrative costs were defined as those costs borne by the responsible State agency(s) in administering and operating the program, excluding any local agency costs.*

*The findings indicate that the EPSDT Program increased State administrative costs $102,386 in State 1 and $218,455 in State 2.*

*The analysis of the findings shows (1) that the impact of the EPSDT Program on State administrative costs in each of the two States was very small in comparison to local site EPSDT costs, (2) that the differences between the two States in administrative cost per screened eligible was substantial and (3) that the majority (95%) of State administrative costs for both States consisted of labor and overhead.*

### Findings

The EPSDT Program increased State agency administrative costs in both States. The EPSDT Program caused an increase in State 1 of $102,386. EPSDT had a substantially higher impact in State 2. The cost of administering EPSDT at the State level in State 2 was $218,455. On a per screened eligible basis, EPSDT State administrative costs were $2.99 in State 1 and $5.19 in State 2 (see Table 5.1).

### Analysis

In comparing State administrative costs and local site costs, it is evident that the EPSDT Program has much less impact on State administrative costs than on local site costs (see Table 5.2). State

administrative costs in State 1, Site 1, accounted for 2 percent of EPSDT Costs (State and local combined) while in Site 2 they accounted for 7 percent. In State 2, Site 3, State administrative costs were 3 percent of State and local EPSDT costs and 2 percent of State and local EPSDT costs at Site 4. From this information, we concluded State administrative costs per screening should not exceed 10 percent of local site costs.

The difference in State administrative cost per screened eligible for the two States was much greater than anticipated. State administrative costs in State 2 were 113 percent higher than those in State 1. Most of the cost difference was a result of higher personnel and overhead costs. We feel the higher personnel costs in State 2 were the result of two factors. State 2 had more staff associated with the EPSDT Program, and the staff members were generally at higher pay levels. The reasons for the larger staff were fourfold: a larger screened population (23 percent larger) a much larger eligible population (166 percent larger), a much larger number of providers (2000 plus physician providers and three times as many public providers), and the operation of a training program. The reason for the difference in pay levels was principally a matter of geographic location. State 2 is located in the high paying northeast while State 1 is a southern State where salaries are generally lower. The high overhead costs in State 2 were due to the larger and more extensive staff creating a larger fringe benefit burden, a higher fringe benefit rate (19% versus 10%), and a more expensive data processing system ($1.30 per screened eligible in State 2 against $1.15 per screened eligible in State 1).

Dividing State administrative cost totals into five sub-categories: (1) salaries, (2) overhead, (3) facilities, (4) equipment, and (5) supplies showed that State 2 had greater expenditures than State 1 in all sub-categories except supplies.

TABLE 5.1: STATE ADMINISTRATIVE COSTS FOR EPSDT PER SCREENED ELIGIBLE

| | Location | |
|---|---|---|
| | State 1 | State 2 |
| Personnel | $ 50,976 | $119,872 |
| Overhead (Data processing, Fringe Benefits, Travel) | 45,955 | 88,403 |
| Facilities | 3,265 | 5,966 |
| Equipment | 690 | 3,067 |
| Supplies | 1,500 | 1,147 |
| TOTAL | $102,386 | $218,455 |
| Screenings | 34,192[1/] | 42,120[2/] |
| State Cost per Screened Eligible | $ 2.99 | $ 5.19 |

[1/] 01/01/75 - 12/31/75

[2/] 04/01/75 - 03/31/76

TABLE 5.2: COST IMPACT OF EPSDT PER SCREENED ELIGIBLE (STATE AND LOCAL SITE COSTS ONLY)

| COST/ACTIVITY CATEGORY | STATE 1 | | STATE 2 | |
|---|---|---|---|---|
| | Site 1 | Site 2 | Site 3 | Site 4 |
| STATE COSTS | $ 2.99 | $ 2.99 | $ 5.19 | $ 5.19 |
| LOCAL COSTS | $142.14 | $ 43.84 | $186.83 | $342.25 |

Salaries and overhead accounted for 95 percent of State administrative costs in State 1 and in State 2. Salaries alone were 50 percent of State administrative costs in State 1 and 55 percent in State 2. In State 1, salary costs were a result of three full time equivalent professional personnel (five personnel with some percentage of their time devoted to the EPSDT program) working as EPSDT staff with one full-time equivalent secretary (two secretaries split 50 percent EPSDT, 50 percent other). In State 2, salary costs came from a staff of eight full time equivalent professionals (12 personnel with some percentage of time devoted to the EPSDT program) and 1.35 full time equivalent secretaries (three secretaries split 45 percent EPSDT, 55 percent other). Overhead costs consisted mainly of data processing costs. In State 1, data processing accounted for 86 percent of overhead and 40 percent of total administrative costs. Fringe benefits and travel made up the remaining portion of overhead costs in both states.

## SECTION VI: IMPACT OF EPSDT ON TOTAL MEDICAID EXPENDITURES

*The impact of the EPSDT program on a State's total Medicaid expenditures is defined as the difference between extrapolated EPSDT program costs (screening, case finding, and case management at the local level, program administration at the State level, and Medicaid services expenditures for the screened sample population) and extrapolated medical services expenditures for the non-screened population.*

*It was found that the EPSDT program increased total Medicaid expenditures in all of the four study situations.*

*The analysis of the findings brought out several additional points:*

- *The cost of program administration at the State level was very low in both States. It played a very minor role in affecting the overall impact of the EPSDT program on total Medicaid expenditures in comparison to local site costs.*

- *The cost of the program operation at the local level was extremely high. Local level costs significantly increased EPSDT program costs and Medicaid expenditures.*

- *In State 1, the increase in total Medicaid expenditures was a result of incurring EPSDT costs for State and local level operations and, unlike State 2, the EPSDT population incurring higher medical services' expenditures than the non-EPSDT population.*

- *In State 2, the increase in total Medicaid expenditures resulted solely from incurring EPSDT costs at the State and local level. The EPSDT population incurred substantially lower medical services' expenditures than the non-EPSDT population.*

Findings

Table 6.1 presents EPSDT costs per screened eligible for each of the cost categories by State and by each of the four local sites visited. Since local site costs varied by site and by subcategory, it was deemed relevant to present costs by site as well as by State.

Table 6.2 presents the extrapolated impact of EPSDT on the Medicaid expenditures for a period of one year. Cost figures are those in Table 6.1 multiplied by the number of persons screened in the relevant state during the months of March 1975 through February 1976 (there were 34,192 screenings in State 1, and 42,120 in State 2). The extrapolated impact of EPSDT on total Medicaid costs (EPSDT costs plus medical services expenditures) was estimated twice for each State. The two estimates resulted from extrapolating two sets of local costs to the State's entire screened population. The figures in each column would reflect the annual Medicaid cost impact of EPSDT to the State if all persons screened in the State during the year were screened at a local provider having the same costs per screened eligible as the site represented in that column. Using State 1 as an example, if all screening sites in the State had costs per screened eligible equal to those at Site 1, the total cost impact of EPSDT would have been to add approximately $4.945 million to the Medicaid budget. On the other hand, if all screening sites had costs per screening equal to those at Site 2, the effect would have only been to add approximately $1.485 million to the Medicaid budget.

TABLE 6.1: COST IMPACT OF EPSDT PROGRAM ON MEDICAID EXPENDITURES - PER SCREENED ELIGIBLE (*Denotes Decrease Due to EPSDT)

| COST/ACTIVITY CATEGORY | STATE 1 | | STATE 2 | |
|---|---|---|---|---|
| | Site 1 | Site 2 | Site 3 | Site 4 |
| STATE COSTS | $ 2.99 | $ 2.99 | $ 5.19 | $ 5.19 |
| LOCAL COSTS | $130.29 | $ 29.09 | $157.22 | $169.20 |
| Case Finding | $ 68.48 | $ 5.51 | $ 68.61 | $ 72.10 |
| Screening Reimbursement | $ 12.90 | $ 20.00 | $ 20.00 | $ 25.00 |
| Follow-up | $ 48.91 | $ 3.58 | $ 68.61 | $ 72.10 |
| IMPACT ON MEDICAL SERVICES EXPENDITURES | $ 11.37 | $ 11.37 | $-58.61* | $-58.61* |
| TOTAL COST IMPACT | $144.65 | $ 43.45 | $103.80 | $115.78 |

TABLE 6.2: EXTROPOLATED COST IMPACT OF EPSDT PROGRAM ON MEDICAID EXPENDITURES (*Denotes Decrease Due to EPSDT)

| COST/ACTIVITY CATEGORY | STATE 1 | | STATE 2 | |
|---|---|---|---|---|
| | Site 1 | Site 2 | Site 3 | Site 4 |
| STATE COSTS | $ 102,234 | $ 102,234 | $ 218,603 | $ 218,603 |
| LOCAL COSTS | $4,454,876 | $ 994,645 | $6,622,106 | $7,126,704 |
| Case Finding | $2,341,468 | $ 188,398 | $2,889,853 | $3,036,852 |
| Screening Reimbursement | $ 441,077 | $ 774,791 | $ 842,400 | $1,053,000 |
| Follow-up | $1,672,331 | $ 122,407 | $2,889,853 | $3,036,852 |
| IMPACT ON MEDICAL SERVICES EXPENDITURES | $ 388,763 | $ 388,763 | -$2,468,653* | $2,468,653* |
| TOTAL COST IMPACT | $4,945,873 | $1,485,642 | $4,372,056 | $4,876,654 |

EPSDT increased State administrative costs in both States but the increase was relatively small in comparison to the effect of local site costs. On an extrapolated basis, EPSDT costs at the State level were $102,234 in State 1 and $218,603 in State 2. These costs were primarily fixed costs. Obviously, it is impossible to implement and operate the EPSDT program without incurring some costs for administration and operation at the State level. However these low cost levels for State program administration do indicate that the program can be administered at low cost for a volume of at least 30,000 to 40,000 screenings per year.

EPSDT also increased Medicaid administrative and operational costs at all four sites, but unlike the impact at the State level, the impact at the local level was substantial. The average extrapolated Medicaid cost impact of the EPSDT Program locally was $4.79 million with a range of $6.13 million. Looking at each of the three subcategories making up a local cost impact, the average was $2.11 million for case finding, $.77 million for screening, and $1.93 million for follow-up. Putting the lowest subtotals for local cost together, the impact of EPSDT on local sites would have been $.75 million, considerably less than the average impact of $4.79 million.

The cost of medical services was apparently increased by EPSDT in State 1. The reverse was true in State 2. The cost of medical services for the unscreened population State 2 far exceeded that of the screened population. The increase in medical service cost per screened eligible in State 1 was $11.37, or on an extrapolated basis, $.39 million for the State. In State 2, EPSDT decreased medical services expenditures $58.61 per screened eligible or $2.47 million for the screened population in that State.

Even though the EPSDT Program did decrease medical service expenditures in State 2, our estimates of the total cost impact of EPSDT on Medicaid for each of the four study observations

showed that the program increased total Medicaid costs. The average Medicaid expenditure for the four sites was $101.92 per screened eligible. The highest cost per screened eligible was $144.65 in State 1, Site 1. The lowest cost per screened eligible was $43.45 found in State 1, Site 2. On an extrapolated basis, EPSDT increased total Medicaid expenditures on an average of $3.92 million with the highest extrapolated cost impact being $4.94 million based on Site 1 costs and the lowest being $1.48 million based on Site 2 costs.

Analysis

The difference in State administrative costs between State 1 and State 2 was significant. The costs in State 2 were 144 percent higher than in State 1. The difference was due primarily to the number and type of personnel involved in administration of EPSDT at the State level. In State 2, where costs were higher, more staff were associated with EPSDT than in State 1, and the additional staff members were generally at higher professional levels (and consequently, pay levels.)

Differences among local sites in total cost per screened eligible and the subcategories of total cost were less than expected. Clustering for total cost per screened eligible was evident for three of the four sites as it was for the three subcategories of local cost.

The impact of EPSDT on the utilization and the cost of medical services for the screened population was different in each of the two States. EPSDT decreased medical service cost in State 2 but increased these costs in State 1. The difference was largely the result of differences in the impact on service utilization in each State. Utilization impacts differed both in services impacted and in the intensity of that impact. EPSDT influences on cost per unit of service also differed between the States. Utilization differences probably resulted from a variety of factors, such as the urbanicity of the population, access to care, health status,

habitual patterns of health care utilization, and other socioeconomic factors. For example, the income standards which were used to qualify persons for Aid to Families with Dependent Children (AFDC) and therefore Medicaid (EPSDT and non-EPSDT persons in our sample) was 16 percent higher in State 2 than in State 1. The income differences between eligibles in the two States may have been related to differences in health status, causing utilization of different services and amounts of services.

The EPSDT Program significantly increased total Medicaid expenditures in both States and all four sites. As previously noted, State costs had relatively little influence in determining the total cost impact of the EPSDT Program. Primarily, EPSDT's ability to decrease Medicaid costs in the short run was dependent upon incurring reasonable local costs and creating large decreases in expenditures for medical services. When these two factors were not present simultaneously, EPSDT did not decrease total Medicaid expenditures. For example, Site 2 had the lowest local site cost of the four local sites, yet it did not reduce total Medicaid costs because EPSDT increased State 1 expenditures for medical services. On the other hand, EPSDT had decreased medical services expenditures in State 2, but the cost of operating the program at Sites 3 and 4 more than offset that decrease.

Several factors weigh heavily in the cost increasing impact of EPSDT on Medicaid. Chief among these factors was the high cost of providing social services at the local level. The cost of social services at the local level accounted for at least eighty percent of the total cost expended at the state and local level at three of the four sites. The fourth site had yet to fully implement an EPSDT social service program.

In analyzing the provision of social services at the local level, we noted several changes which could be made in local operations to decrease the high cost per screened eligible. These

changes reflect our experiences in developing the Best Practices Report as well as the application of some cost control techniques.*

Screening volume is the principal factor affecting the cost of providing social services on a per screened eligible basis. Accordingly, the optimal course of action for social service agencies to pursue to reduce their cost per screened eligible is to increase their volume of "show-up" referrals to the local providers while holding the cost of doing so constant. The number of "show-up" referrals is the key indicator. The number of referrals is not a key indicator if the "no-show" rate is high. Likewise, the number of eligibles identified as potential EPSDT participants or the number receiving outreach are not key indicators unless they correlate strongly with the number of "shows." It is all important then to concentrate resources in the area of increasing the number of "shows." We can see its effect at the local site level. Referring again to Table 4.1, if Sites 3 and 4 in State 2 had been able to rise to Site 2's level of 610 screens per year,** cost per screened eligible would have decreased from $157.22 to $99.41 at Site 3 and from $169.20 to $10.59 at Site 4. Increasing volume to 1,307**, as Site 1 had accomplished, would have reduced costs per screened eligible at Sites 2, 3, and 4 to $24.24, $57.06, and $60.75, respectively.

The actual techniques or methods used to increase the number of "shows" may vary. Some localities with large catchment areas have used direct mailings very effectively to reduce their cost burden and at the same time maintain a high level of "shows". In smaller catchment areas, direct mailings are not effective as

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*Applied Management Sciences, Best Practices Report, "Assessment of EPSDT Practices and Costs," Social and Rehabilitational Office, Contract No. SRS-500-76-0019, May 21, 1976.

**Without adding staff or equipment.

direct planning or personal outreach. Direct phoning is inexpensive but contact with a significant portion of the eligibles is impossible or complicated due to the fact that many eligibles have no phones. Personal outreach up until now has been expensive since professional personnel have been involved in contacting the eligibles. The concept of using indigent personnel to conduct outreach offers a low-cost alternative with the potential to have a much higher "show" rate per encounter than either the mail or phone alternatives. But management controls on these efforts must be clearly and carefully structured if high outreach productivity is to be achieved and maintained.

Another factor affecting the cost per screened eligible is the cost of labor and whether or not that labor cost is fixed or variable in terms of volume. State 2 has effectively implemented a program to intensively supply social services for EPSDT without the use of professional (MSW) personnel. The effort may not be as effective as one using only a professional staff, but the cost per screened eligible may be lower. The same thing can be said with even more intensity for increasing the reliance on variable man hours. A large committment of permanent EPSDT staff does not provide the flexibility to shift emphasis as the demand for services changes. Unless the agency is operating at or near an optimal level, a greater flexibility in staff assignments will result in lower cost per screened eligible.

Finally, a factor sometimes overlooked but which is extremely important, is the development and maintenance of an equilibrium between productivity and quality of service in providing social services for EPSDT. We feel the best way to achieve this equilibrium is to establish a set of standards or targets for each task. The standards or targets are a frame of reference to outline how a service should be provided, by whom, with what resources, and at what level of productivity. Then, as EPSDT services are provided, the supervisor or Director compares actual performance with the standard or target to determine if there is a

difference between the two. If a negative difference does exist, the difference is examined with staff to discover a more efficient way of providing the service. Several local sites have used the equilibrium design very successfully to eliminate unproductive practices that can detract from the quality of providing other services. Consider the following example. One agency conducted up to three follow-up phone calls subsequent to an initial encounter to generate a screening. Each phone call cost an estimated one dollar. However, in only five percent of the cases did the third call result in a screening. They found that the third phone call was not worth the expense due to its lack of success. It was discontinued with a resultant 25 to 30 percent decrease in phone costs for that task and only a five percent decrease in effectiveness.

Because of varying local conditions, only the local social service agency can accurately choose which of the three factors mentioned or others it will concentrate on. However, each agency should strive to produce the largest volume of "shows" at the lowest per unit cost while maintaining adequate case management and follow-up services.

## SECTION VII: REPRESENTATIVENESS OF STUDY FINDINGS

*This section makes explicit the limitations of the study scope and design and qualifies interpretations placed on EPSDT program cost data. Specifically, use of four non-random local screening providers in two States implies that local and state cost data included in the report are not necessarily representative of local costs in the relevant state, or of state costs throughout the country. Conversely, medical services utilization and expenditures can be considered representative of each state's experience because a significantly large, randomly selected sample of each state's Medicaid population was used to tabulate medical utilization and expenditure data. It should also be noted that procedures applied to collection and tabulation of both EPSDT program costs and medical service costs emphasized maintaining reliability and validity of the data.*

### Study Design

In developing the scope of this study, SRS was interested in obtaining an analysis of good practices in screening and case management, as well as obtaining cost measurement. Consequently, local sites were designated by participating states on the basis of quality of their practices and data availability, not on the basis of their representativeness.

Strong points of the study design were found in the assessment of medical services utilization and expenditures. The sample (3,200) of paid claim histories was large enough to be statistically representative of Medicaid eligibles under 21 years of age in both states. The sample was randomly selected and stratified

to enhance comparability of screened and unscreened members. Stratum sizes were proportional to the under-21 Medicaid eligible population in each of the two states. Each sample stratum was evenly divided between screened and unscreened children. Persons included in the screened half of the sample were randomly selected from those receiving a screening exam during March and April 1975. Persons in the unscreened half were randomly selected from Medicaid eligibles under 21 who were continually eligible from March 1975 through February 1976, and who did not receive a screening exam prior to or during that period. Medical service tabulations for screened and unscreened persons included claims for services received from March 1975 through February 1976.

Procedural Reliability

A survey instrument was prepared for capture of data pertaining to state agency, local social service agency, and local screening site costs. Care was taken to produce an instrument which would elicit consistent responses, and to develop procedures which would assure consistent application of the instrument.

The instrument contained multiple questions and items in each measurement category, so inconsistent responses could be easily detected. Since some cost measurements were obtained during the barrier assessment and best practice interviews, we used those measurements as a double-check on responses recorded with the instrument. Instructions for use of this instrument were standardized, and the instrument was administered by the same person in all locations.

Another focus of procedural concern pertained to abstracting data from State Medicaid records. An abstracting manual was prepared, personnel were trained in appropriate procedures, and trained personnel abstracted the data under direct supervision of the author of the manual. Four service categories for one state were abstracted a second time by different personnel as a control measure. Comparisons of the abstracting results indicated less than a 5 percent difference between the two trials in utilization totals and in expenditure totals.

## Study Validity and Representativeness

Random selection, stratification, and adequate size of the samples enhanced the validity of medical service utilization and expenditure data tabulated from the States' Medicaid paid claim history records. It can be asserted with confidence that differences in medical utilization and expenditures are accurately reflected for the two states studied. However, more caution should be exercised in interpreting data reported on state and local EPSDT costs. Because state accounting procedures did not specifically identify all costs attributable to EPSDT, such costs were estimated through interviews with state personnel. Since state costs were estimates, they can only be interpreted as approximations, not precise measures, of actual state administrative costs. A similar estimation problem existed at the local level, but its potential inaccuracy was exacerbated by a non-random selection of only two local providers in each state. Therefore, reported costs of administering and operating EPSDT at the local level can be interpreted only as two observations within the existing range of local costs in each of the two states. Despite these qualifications, to our knowledge, the study findings provide more comprehensive information about EPSDT costs and about changes in medical service utilization following entry into the EPSDT program than has been available previously.

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Note to Reader:

Applied Management Sciences has indicated in Section VII of this report a number of reasons why the findings should be viewed with caution. Additionally, it should be noted that the quantitative differences between the EPSDT and non-EPSDT sample results have not been subjected to statistical analysis in the report.

To obtain an indication of the statistical validity of the AMS conclusions, SRS/OPRE personnel applied t-tests to the data supporting the totals in Table 2.3, "Medicaid Utilization by the Sample Population in State 2". The following conclusions for the State 2 sample were supported at the .95 confidence level:

- Screened children had more dental and optical procedures than unscreened children

- Unscreened children had more inpatient hospital days, outpatient hospital visits, and physician other visits than screened children

Failing the t-test at the .95 level were utilization differences between State 2 screened and unscreened children in:

- Physician office visits

- Prescriptions

- Clinic visits

- Emergency visits

- Total ambulatory routine care (physician offices, hospital outpatient settings, and clinics)

While this report must be viewed as preliminary without statistical analyses, Applied Management Sciences is conducting additional work in the two States and will prepare another report which not only will present such analyses, but will compare the utilization and costs of the sample populations during the year preceding the screening month with the utilization and costs for two years following screening.

January 26, 1977

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