Michigan 2001 External Quality Review

EPSDT Study

Introduction

The Michigan Department of Community Health (MDCH) contracted with Delmarva Foundation for Medical Care (Delmarva) to conduct a statewide external quality review (EQR) of early and periodic screening, diagnosis, and treatment (EPSDT) services for calendar year (CY) 2001. This assessment was conducted to verify that Medicaid beneficiaries in the State of Michigan received high-quality, accessible care consistent with Michigan EPSDT standards.

The findings of this study include statewide participation rates for health plan and fee-for-service (FFS) populations for the year 2001. The findings also trend participation rates during CY 1999 through CY 2001. In general, results demonstrate that EPSDT participation rates consistently improved over the three-year period between 1999 and 2001. Further, in the 2001 study, almost all of the children received at least one type of EPSDT service. Lower participation rates are linked with demographic characteristics. African-American, Hispanic, urban residents, and children with disabilities have lower participation rates than other populations.

Purpose

The purpose of the 2001 EQR was to assess EPSDT services program-wide, describing services for children in both the managed care and FFS populations. The study was designed to:

- Determine EPSDT participation rates for children in the managed care and FFS programs;
- Identify demographic characteristics among Medicaid beneficiaries (age, race, location, urban versus rural, etc.) that affect EPSDT participation rates;
- Identify groups at high risk for receiving fewer preventive services; and
- Determine the reliability of administrative data (claims and encounter) to accurately monitor EPSDT service delivery.

The 2001 EQR study also included encounter/administrative data validation. For all beneficiaries, the study determined whether medical records included any services that were not reported in claims/encounter data and the agreement between administrative data and medical record documentation. Encounter data provide an electronic record of services that health plan members receive. The data are housed in the state's Decision Support System (DSS).

Background

Established as part of the Medicaid program in 1967 (Gavin et al., 1998), EPSDT provides for comprehensive and periodic screening and evaluation of health, developmental, and nutritional status for all Medicaid-enrolled children from birth through 20 years of age. EPSDT also provides for services necessary to correct problems identified through screening.

The Omnibus Budget Reconciliation Act of 1989 added further definition and expanded the EPSDT program (Gavin et al., 1998). As required by the Centers for Medicare and Medicaid Services (CMS), the EPSDT program consists of two core components:

- Assuring the availability and accessibility of required health care resources; and
- Helping Medicaid beneficiaries and their parents or guardians effectively use these resources.

Necessary services vary depending upon a child's age. The EPSDT program recognizes this by requiring that services be delivered according to a periodicity schedule (e.g., certain services are to be delivered at specific times in the child's life). A copy of the periodicity schedule is included as Appendix A to this report. States are given some discretion in selecting the services to include in the schedule. However, the schedule is generally expected to conform to the one recommended by the American Academy of Pediatrics (2000). The services listed in the schedule include:

- Initial or interval history;
- Measurements, including height, weight, head circumference, and blood pressure;
- Vision, hearing, and dental screening;
- Developmental/behavioral assessments;
- Physical examination;
- Immunization status review;
- Various tests, including metabolic and lead assessment, hematocrit, urinalysis, and tuberculin; and
- Anticipatory guidance, including injury and violence prevention, interpretive conference, and nutritional counseling.

Literature Review

Several studies have investigated factors related to increased use of EPSDT services and outcomes. Stuart, Steinwachs, Starfield, Orr, and Kerns (1995) found that having a regular source of care (e.g., an assigned primary care provider) increased utilization of well-child visits. Frye (1998) suggested that continuity of care (similar to having a regular source of care), regular office hours, required EPSDT screening, and online eligibility determination increase well-child visits. Hakim and Bye (2001) found that having up-to-date well-child visits was associated with reduced avoidable hospitalizations (e.g., for asthma). Despite the relationship between having a continuous primary care

provider and utilization of well-child visits, studies have found no significant relationship between managed care and FFS Medicaid participation and use of well-child visits (Newacheck, Hung, Marchi, Hughes, Pitter, & Stoddard, 2001; Long, & Coughlin, 2001).

The literature suggests several health system characteristics that may influence access to EPSDT services (see e.g., Gavin et al., 1998; U.S. General Accounting Office [GAO], 2001). These characteristics include state Medicaid policies and EPSDT mandates, physician participation rates, caseload size, Medicaid eligibility determination, and provider policies.

Michigan EPSDT Standards and Guidelines

The MDCH's *Medical Services Administration Physician Manual* (1993) documents the EPSDT policies for the State of Michigan. The MDCH encourages each Medicaid beneficiary in the state, whether a health plan enrollee or FFS beneficiary, to establish a relationship with a primary care provider. The primary care provider is responsible for providing EPSDT services, ensuring that transportation is available to obtain services, and reporting services to the state. According to the policy, the state also supports outreach to beneficiaries to promote utilization of EPSDT services. The policy provides standards for each EPSDT service and describes billing codes (Current Procedural Terminology [CPT] and International Classification of Diseases-9th Revision [ICD-9]) to be used in filing claims and reporting EPSDT services.

Profile of the Michigan EPSDT Population

According to information extracted from the DSS, in CY 2001 there were 585,789 Michigan Medicaid beneficiaries under 21 years of age. Of these 112,806 (19%) were in the FFS program; 472,983 (81%) were enrolled in health plans.

Race/ethnic group demographics indicated that the health plan population was 42% African-American, 50% Caucasian, 6% Hispanic, and 0.5% American Indian. FFS demographics indicated that this population was 28% African-American, 60% Caucasian, 7% Hispanic, and 0.7% American Indian.

There were 356,897 children who met the study criteria. To be eligible a beneficiary (age 1 through 20) had to be enrolled in Medicaid and either in the same health plan or FFS for the entire 12 months of calendar year 2001. Infants under age 1, born in the first half of the year, who were enrolled in the same program (health plan or FFS) for the second half of the year were also included.

Methods

Study Questions

The following questions were addressed in this study.

Question 1

For the Medicaid pediatric population, what percentages of FFS beneficiaries and health plan enrollees received office-based and non-office-based services, and what percentages participated in any type of EPSDT service?

Question 2

Among beneficiaries who received services, how have comprehensive EPSDT participation rates and rates for specific EPSDT components changed between 1999 and 2001? Were the trends consistent among FFS beneficiaries and health plan enrollees and within each age group?

Question 3

Among all beneficiaries, and specifically among those who had received services, how were population characteristics related to EPSDT visit rates?

Question 4

What specific determinants of low EPSDT participation and specific high-risk groups could potentially be targeted for special interventions by the health plans or the state? (For example, which beneficiaries were likely to have very few or no preventive services? How did rates differ by geography, e.g., urban versus rural? What segments of the population may require special attention?)

Question 5

To what extent may claims and encounter data be relied upon to monitor EPSDT service delivery? What is the level of agreement between claims/encounters and abstracted medical record data?

Study Design

The study merged information from several sources, including Medicaid enrollment, claims/encounter data from the state's data warehouse, and abstracted medical record data. The study focused on services delivered during CY 2001, using the same four age groups (0 through 2, 3 through 6, 7 through 12, and 13 through 20 years) as in previous EPSDT studies. Indicators were constructed to be comparable to previous years.

Analyses regarding the total population relied on encounter and claims data for the entire state Medicaid population rather than a sample. These analyses included a detailed breakdown of rates by race and geography. These population-based analyses took advantage of the extensive data available in the DSS.

From the claims and encounter records, rates of service were constructed for EPSDT preventive services overall and by age category. The rates were computed by program type (managed care versus FFS), race/ethnicity, gender, and age category. Claims/encounter data were also used to quantify and describe the types of diagnoses and referrals made during EPSDT screenings.

For the FFS beneficiaries and managed care enrollees, servicing providers were identified from claims or encounter data. Each provider's complete record for 2001 was abstracted; that is, all encounters were reviewed and data collected from both EPSDT-specific visit information and from other types of visits.

Data Sources

Two major data sources were utilized for this study:

- Data from the data warehouse extracted using the DSS; and
- The providers' medical records.

DSS includes Medicaid managed care encounter and FFS claims data as well as non-Medicaid data. It has the capability for integrating data with other databases such as: vital record; lead assessment; Women, Infants and Children (WIC); and the Michigan Childhood Immunization Registry (MCIR). For all beneficiaries who received services, including those with no EPSDT services, demographic information and the types of ambulatory services received were summarized from administrative data.

The second data source consisted of information abstracted from medical records requested from both managed care and FFS providers.

The check marks in Table 1 indicate what information was extracted from claims/encounter data and what information was extracted from medical records. Depending on availability, the medical record data were augmented with information from the state's data warehouse and the DSS.

Table 1. Information extracted from claims/encounters and medical records.

Service	Age 0 through 2		Age 3 through 6		Age 7 through 12		Age 13 through 20	
	Medical Record	Encounter Record	Medical Record	Encounter Record	Medical Record	Encounter Record	Medical Record	Encounter Record
EPSDT screening or evaluation and management	✓	✓	✓	✓	✓	✓	✓	✓
Anemia tests (hemoglobin)	✓	✓						
Immunization status	✓	✓	✓	✓	✓	✓	✓	✓
Vision screening	✓	✓	✓	✓	✓	✓	✓	✓
Hearing screening	✓	✓	✓	✓	✓	✓	✓	✓
Dental screening	✓		✓		✓		✓	
Lead screening	✓		✓					
Lead blood level test (assessment)	✓	✓	✓	✓				
Height and weight measurement	✓		✓		✓		✓	
Head circumference	✓							
Medical history	✓		✓		✓		✓	
Family and social history	✓		✓		✓		✓	
Developmental assessments	✓		✓		✓		✓	
Nutritional assessments	✓		✓		✓		✓	
Unclothed physical	✓		✓		✓		✓	
Anticipatory guidance	✓		✓		✓		✓	
Interpretive conference	✓		✓		✓		✓	
Blood pressure measurement			✓		✓		✓	

Population and Sampling Plan

The study population consisted of all beneficiaries (age 1 through 20 years) continuously enrolled in Medicaid for CY 2001. Infants (less than 1 year of age) born prior to July 2001 and continuously enrolled in the program July through December were also included in the population. Both FFS beneficiaries and managed care enrollees throughout the state of Michigan were represented. The study included the following subpopulations:

- Children with EPSDT claims/encounters;
- Children with other office-based claims/encounters;

- Children with emergency room (ER), inpatient, or other non-office-based claims and/or encounters only; and
- Children with no claims/encounters.

Medical record abstraction was based on a multistage random sample of beneficiaries and their medical records. The sample involved disproportionate sampling of children in the four age strata (0 through 2 years, 3 through 6 years, 7 through 12 years, and 13 through 20 years). The sample sizes were calculated to assure that each age grouping for both FFS and the health plans was sufficient to allow for generalization of the findings. Because infants had more stringent criteria the 0 through 2 years group was larger than the others.

Table 2. Comparison of the population and sample.

		Age Group								
		0 through 2 Years		3 through 6 Years		7 through 12 Years		13 through 20 Years		Total
	Program	N	Rate	N	Rate	N	Rate	N	Rate	N
Population	FFS	7,855	24%	6,581	20%	8,546	27%	9,803	30%	32,785
	Health Plan	37,853	22%	44,433	26%	54,336	31%	36,695	21%	173,317
Sample	FFS	400	40%	200	20%	200	20%	200	20%	1,000
	Health Plan	400	40%	200	20%	200	20%	200	20%	1,000

The sample was also stratified by the program type (health plan or FFS) and whether the child received EPSDT services according to administrative data.

Based on Health Plan Employer Data and Information Set (HEDIS®)[1] (National Committee for Quality Assurance [NCQA], 2001) specifications, a minimum sample size of 411 was attained for each of the four groups. A 20% oversample was selected to ensure that sufficient records were collected to allow inferences at the 95% plus or minus 5% confidence level. Therefore, the samples consisted of:

- 500 medical records in FFS and 500 in the managed care program (health plans) representing beneficiaries who participated in EPSDT services according to claims/encounter data; and
- 500 medical records in FFS and 500 in the managed care program (health plans) representing beneficiaries who did not participate in EPSDT services but did receive other services.

[1] HEDIS® is a registered trademark of the National Committee for Quality Assurance (NCQA).

Analysis Method

The analysis summarizes data from the DSS and medical record abstractions and the agreement or disagreement between the two. For all beneficiaries who received services, including those with no EPSDT services, demographic information and the types of services received were summarized from administrative data.

Data from claims and encounter records were used to construct a grid of EPSDT services by age group based on the Michigan periodicity schedule (see Appendix A). Areas in which claims and encounter data were missing or incomplete were noted. Rates based on the number of eligible children receiving EPSDT services over the total number of eligible children receiving at least one service in each age group were determined.

Medical record abstractions were used to establish baseline rates for several indicators that could not be measured adequately with claims/encounter records. These include assessments of height, weight, and blood pressure; unclothed physical exams; developmental assessments; and other components listed in the periodicity schedule. Rates were calculated as the number of individuals receiving each type of service over the total number eligible to participate in the service among those who received services in general.

Medical record reviews were conducted according to a protocol using specific review guidelines developed for accurate data abstraction for the review instrument – a tool using the MedQuest program. Consistency checks and edits were built into the instrument.

Certain rates ("quality indicators") received attention due to their importance within the EPSDT program. They also represent areas for which specific interventions may be targeted. They include:

- Overall receipt of EPSDT services;
- EPSDT service-specific component rates;
- Lead assessment rates; and
- EPSDT visit immunization status assessment rates.

Calculations for the quality indicators are presented in Table 3.

Table 3. Quality indicators.

Indicator	Numerator	Denominator
Receipt of a comprehensive EPSDT visit	Number of eligible beneficiaries who received all required EPSDT components	Total number of eligible beneficiaries receiving services
EPSDT service-specific component rates	For each of the core components, the number of eligible beneficiaries who received that component listed in the periodicity schedule	Total number of eligible beneficiaries receiving services
Lead assessment rate	Total number of EPSDT-eligible beneficiaries who received a lead assessment	Total number of eligible beneficiaries receiving services
EPSDT visit immunization status assessment rate	Total number of EPSDT-eligible beneficiaries who had immunizations assessed during the time period	Total number of beneficiaries who had an EPSDT visit and were due immunizations during the time period according to the periodicity schedule

Note: Counts expressed in numerators and denominators are limited to eligible beneficiaries meeting criteria for inclusion in the denominator during 2001. The child's age for the purpose of eligibility for specific services was determined by his or her age on the last day of the reporting period. EPSDT-eligible beneficiaries are defined as age-appropriate beneficiaries in Medicaid.

Design Limitations

The validity of the study depended on the reliability of medical records and reporting of FFS claims and managed care encounter records. Detailed information on many of the EPSDT services was only available in the medical records. Services may also have been delivered by other providers but not reported to the primary care provider (PCP), the health plan, or MDCH.

Results

The results are organized around the five study questions.

Question 1

For the Medicaid pediatric population, what percentages of FFS beneficiaries and health plan enrollees received office-based and non-office-based services, and what percentages participated in any type of EPSDT service?

In this section, rates for EPSDT services are presented and compared for FFS beneficiaries and health plan enrollees. Variation in rates across demographic groupings is also assessed. The rates in this section combine information from claims and encounter data with medical record abstraction information.

EPSDT Rates for Health Plans and FFS

Figure 1. Comprehensive EPSDT services rates.

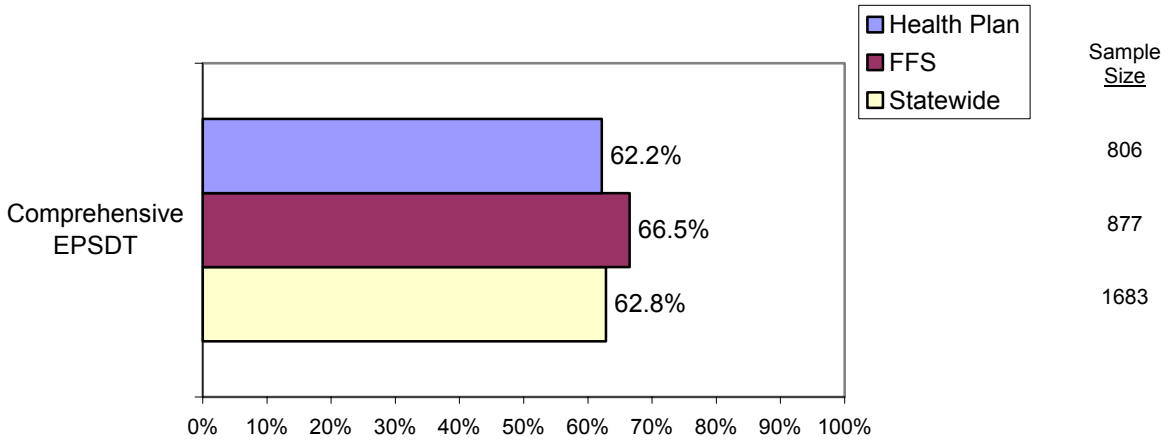


Figure 1 indicates that children across all age groups in the FFS and managed care systems had similar rates of comprehensive EPSDT visits (including a physical examination, immunization status, hearing screening, developmental assessments, hemoglobin/hematocrit, urinalysis, TB testing, and lead assessment) during the year (66.5% versus 62.2%). The difference was not statistically significant. A visit was considered comprehensive if a preventive visit was billed in a claim or encounter record, or all required components of EPSDT were received according to the medical record documentation.

Figure 2. Rates for children receiving at least one EPSDT service component.

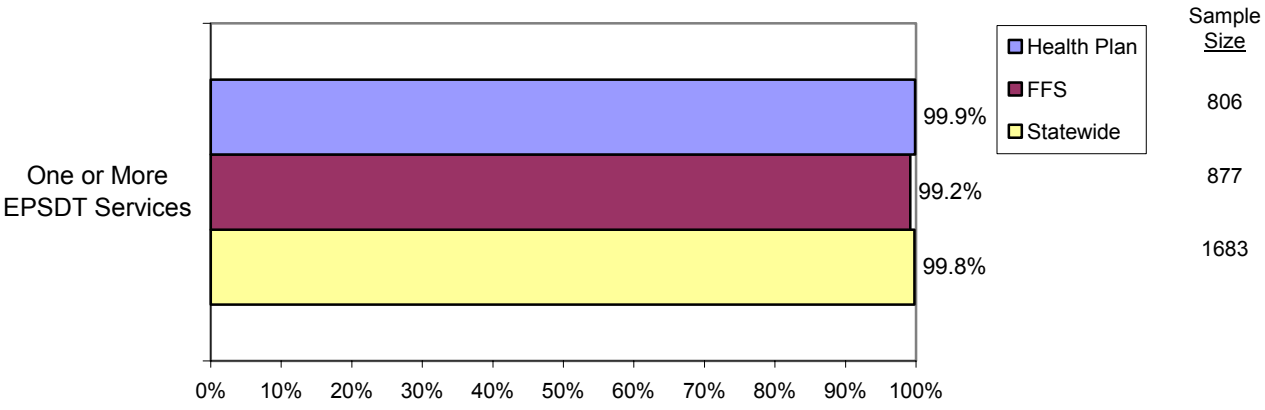
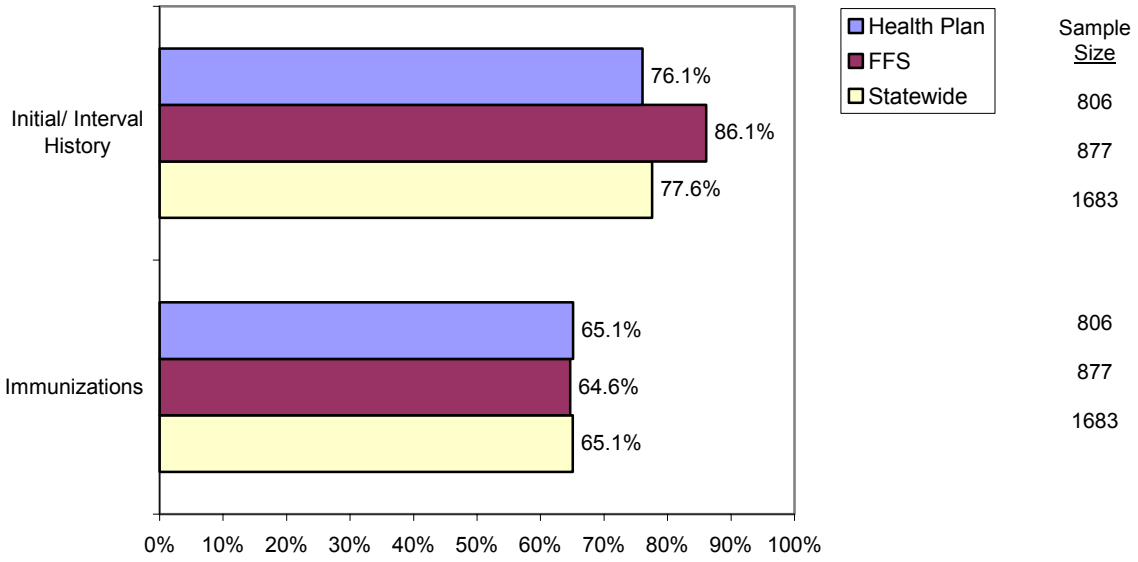


Figure 2 indicates that nearly all children in the 2001 study sample participated in at least one EPSDT service component during the year. This could have been a physical exam, immunization status assessment, lead assessment, or any of the other services listed in the periodicity schedule.

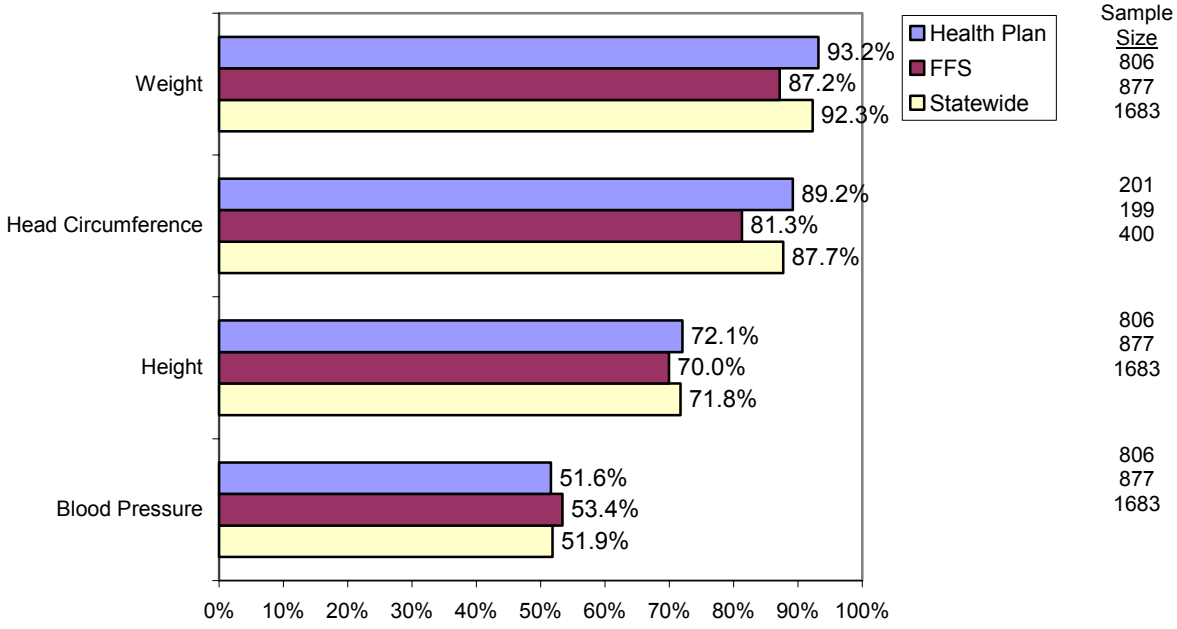
Rates for Individual Components of EPSDT for Health Plans and FFS

Figure 3. Rates for medical history and immunization status assessment.



As indicated in Figure 3, children in FFS were more likely than children in health plans (86.1% versus 76.1%) to have a documented medical history. The rates of immunization status assessments did not differ between health plans and FFS.

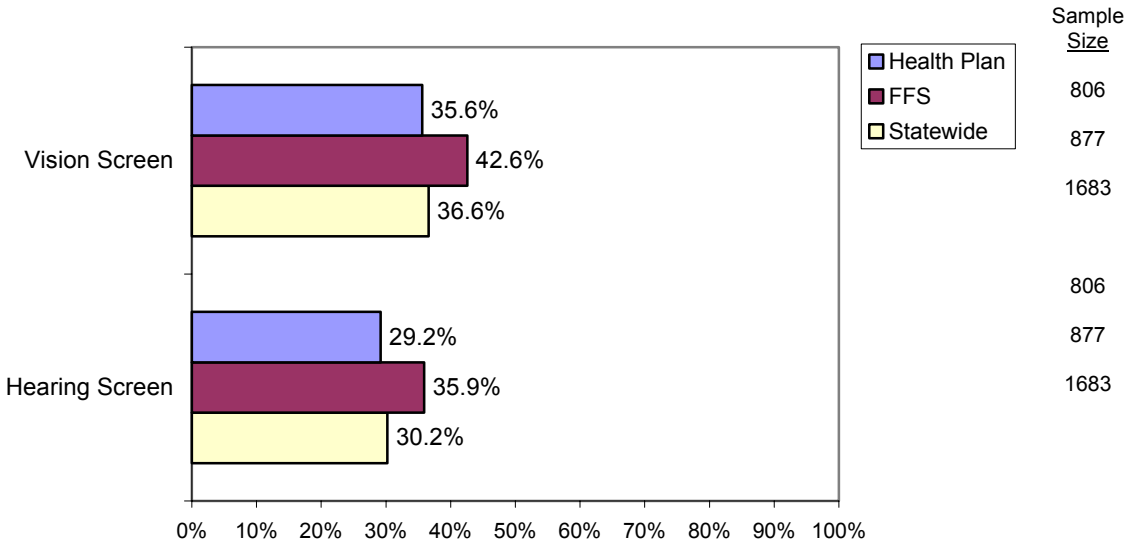
Figure 4. EPSDT measurement components.



Note: Head circumference was a requirement for age 24 months and younger.

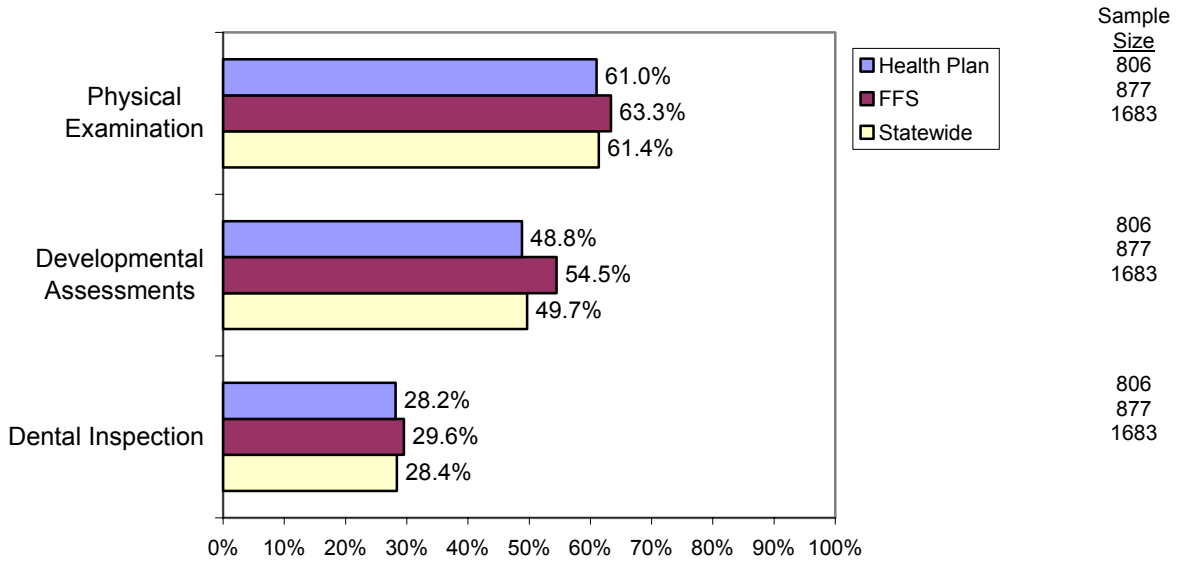
As indicated in Figure 4, children in health plans were more likely (93.2% versus 87.2%) to have a weight measurement documented and head circumference (89.2% versus 81.3%) in their records. Health plan and FFS did not differ significantly for the other two measures (blood pressure and height).

Figure 5. Sensory screenings.



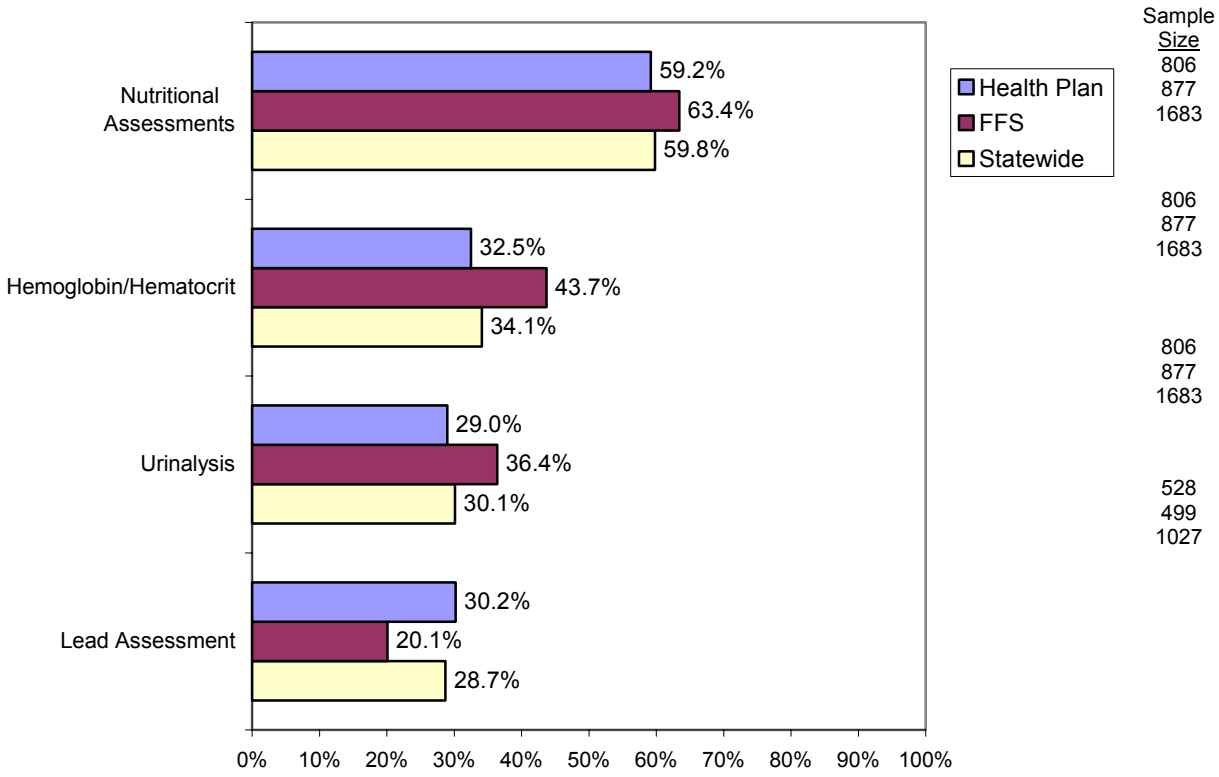
As indicated in Figure 5, vision screening was found more often than hearing screening (36.6% versus 30.2%, statewide). Children in FFS were more likely than children in health plans to have hearing and vision screening documented in their records.

Figure 6. Physical examinations, developmental assessments, and dental inspections.



According to Figure 6, there were no statistically significant differences in the rates of documentation of developmental assessments, physical examinations, and dental inspections between FFS and health plans.

Figure 7. Laboratory tests and assessments.



NOTE: Lead assessment applied only to children under the age of 6.

As shown in Figure 7, children in FFS were more likely to have hemoglobin test, urinalysis, and nutritional assessments, while children in health plans were more likely to have a lead assessment.

Figure 8. TB tests and other EPSDT components.

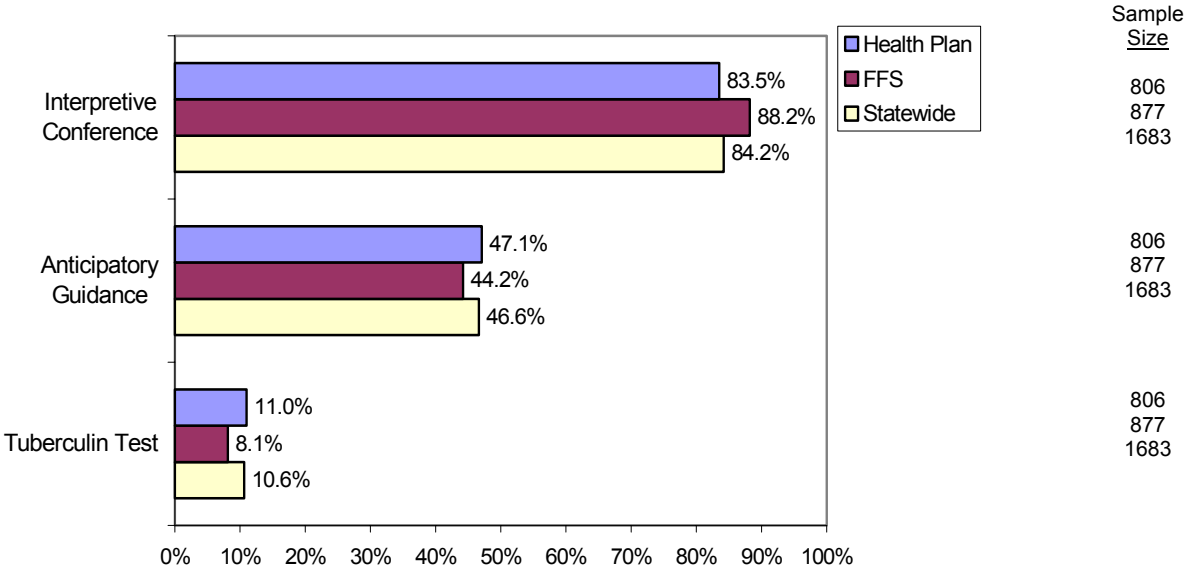


Figure 8 indicates that interpretive conferences were conducted regularly during visits. Anticipatory guidance was documented slightly less than half the time. Tuberculin testing was not well documented (10.6%) overall.

Question 2

Among beneficiaries who received services, how have comprehensive EPSDT participation rates and rates for specific EPSDT components changed between 1999 and 2001? Were the trends consistent among FFS beneficiaries and health plan enrollees and within each age group?

Comparison to Prior Years

Tables 4a, b, c, and d display EPSDT results compared to prior years (1999 and 2000) for the four age groups. In constructing these tables, every effort was made to closely duplicate methodology used in prior years. Nevertheless, the sample methodology for each of the three years differed substantially. The 1999 study was based on a much larger sample from each health plan. A triple asterisk indicates rates that were not applicable or relevant to the age group. Claims and encounter records were used to augment the comprehensive EPSDT rates (including physical examination, immunization status, hearing screening, developmental assessments, hemoglobin/hematocrit, urinalysis, TB testing, and lead assessment). The contribution of claims and encounter records to rates is presented in the following section.

Table 4a. Change in EPSDT rates over three year period age 0 through 2.

Age 0 through 2	Health Plans			FFS		
Indicator	1999	2000	2001	1999	2000	2001
Comprehensive EPSDT *	**	63%	90%	**	66%	90%
One or more EPSDT services	100%	100%	100%	98%	99%	99%
Initial/interval history	76%	90%	85%	78%	86%	92%
Immunization status	85%	81%	94%	76%	86%	89%
Height	83%	76%	89%	69%	85%	80%
Weight	97%	98%	97%	84%	96%	91%
Head circumference	68%	67%	79%	63%	81%	74%
Blood pressure	***	***	***	***	***	***
Vision screening	49%	55%	44%	45%	55%	49%
Hearing screening	49%	40%	38%	45%	53%	45%
Developmental assessments	65%	63%	77%	67%	72%	79%
Physical examination	70%	84%	85%	60%	73%	76%
Dental inspection	42%	49%	41%	20%	37%	41%
Hemoglobin/hematocrit	41%	50%	29%	25%	40%	28%
Urinalysis	***	***	***	***	***	***
Nutritional assessments	61%	72%	87%	53%	76%	85%
Lead assessment	27%	29%	30%	16%	21%	20%
Tuberculin testing	14%	18%	10%	7%	12%	3%
Anticipatory guidance	55%	59%	73%	44%	68%	71%
Interpretive conference	75%	71%	91%	73%	84%	94%

*This score includes a physical examination, immunization status, hearing screening, developmental assessments, hemoglobin/hematocrit, urinalysis, TB testing, and lead assessment.
**This score was not reported.
***This screening/test is not applicable for this age group.

The comprehensive EPSDT rates for children age 0 through 2 showed marked improvement from 2000 to 2001. The comprehensive rate was not reported in 1999. Improvement was greatest for the comprehensive EPSDT rate and immunization status, developmental assessments, nutritional assessments, and interpretive conference. Vision and hearing screenings, and tuberculin testing declined between 2000 and 2001.

Table 4b. Change in EPSDT rates over three year period age 3 through 6.

Age 3 through 6	Health Plan			FFS		
Indicator	1999	2000	2001	1999	2000	2001
Comprehensive EPSDT *	**	40%	69%	**	45%	70%
One or more EPSDT services	99%	99%	100%	95%	99%	99%
Initial/interval history	68%	72%	76%	62%	81%	90%
Immunization status	71%	63%	72%	47%	65%	65%
Height	78%	73%	77%	67%	80%	75%
Weight	96%	92%	93%	84%	95%	90%
Head circumference	***	***	***	***	***	***
Blood pressure	58%	55%	61%	52%	55%	63%
Vision screening	45%	47%	44%	36%	52%	39%
Hearing screening	50%	42%	35%	40%	51%	26%
Developmental assessments	47%	48%	56%	45%	55%	63%
Physical examination	60%	69%	62%	51%	73%	68%
Dental inspection	34%	36%	38%	27%	26%	31%
Hemoglobin/hematocrit	***	***	***	***	***	***
Urinalysis	27%	26%	29%	22%	41%	31%
Nutritional assessments	41%	41%	62%	36%	43%	71%
Lead assessment	25%	33%	31%	11%	22%	21%
Tuberculin testing	23%	17%	11%	7%	15%	4%
Anticipatory guidance	41%	38%	51%	35%	40%	39%
Interpretive conference	65%	61%	79%	56%	67%	90%

*This score includes a physical examination, immunization status, hearing screening, developmental assessments, hemoglobin/hematocrit, urinalysis, TB testing, and lead assessment.
**This score was not reported.
***This screening/test is not applicable for this age group.

Improvement was evident for children age 3 through 6, although rates were generally lower than for children age 0 through 2. Trends for most components for the children age 3 through 6 were consistent with those for children age 0 through 2. Dental inspections showed improvement for 2001.

Table 4c. Change in EPSDT rates over three year period age 7 through 12.

Age 7 through 12	Health Plan			FFS		
Indicator	1999	2000	2001	1999	2000	2001
Comprehensive EPSDT *	**	33%	42%	**	24%	53%
One or more EPSDT services	99%	99%	99%	100%	98%	99%
Initial/interval history	58%	77%	71%	59%	74%	85%
Immunization status	48%	51%	51%	45%	45%	46%
Height	66%	70%	63%	66%	66%	68%
Weight	93%	91%	92%	82%	84%	86%
Head circumference	***	***	***	***	***	***
Blood pressure	56%	66%	58%	55%	59%	60%
Vision screening	37%	43%	26%	32%	36%	37%
Hearing screening	49%	29%	17%	46%	36%	28%
Developmental assessments	35%	44%	35%	27%	41%	47%
Physical examination	45%	71%	51%	39%	56%	59%
Dental inspection	23%	31%	20%	20%	14%	24%
Hemoglobin/hematocrit	***	***	***	***	***	***
Urinalysis	24%	35%	26%	25%	28%	28%
Nutritional assessments	29%	34%	50%	30%	33%	59%
Lead assessment	***	***	***	***	***	***
Tuberculin testing	***	***	***	***	***	***
Anticipatory guidance	27%	41%	35%	20%	27%	35%
Interpretive conference	54%	62%	82%	52%	61%	88%

*This score includes a physical examination, immunization status, hearing screening, developmental assessments, hemoglobin/hematocrit, urinalysis, and TB testing.
**This score was not reported.
***This screening/test is not applicable for this age group.

For children age 7 through 12, EPSDT rates were the lowest, although improvement in the comprehensive EPSDT rates was evident compared to the previous year.

Table 4d. Change in EPSDT rates over three year period age 13 through 20.

Age 13 through 20	Health Plan			FFS		
Indicator	1999	2000	2001	1999	2000	2001
Comprehensive EPSDT*	**	20%	51%	**	27%	55%
One or more EPSDT services	98%	100%	100%	96%	100%	98%
Initial/interval history	59%	64%	74%	60%	92%	79%
Immunization status	36%	33%	42%	38%	36%	44%
Height	56%	49%	62%	51%	64%	59%
Weight	92%	93%	91%	73%	87%	83%
Head circumference	***	***	***	***	***	***
Blood pressure	76%	77%	79%	69%	84%	81%
Vision screening	29%	22%	28%	33%	36%	32%
Hearing screening	52%	22%	13%	60%	47%	20%
Developmental assessments	30%	31%	29%	42%	52%	34%
Physical examination	39%	48%	49%	44%	60%	52%
Dental inspection	18%	11%	20%	13%	17%	24%
Hemoglobin/hematocrit	***	***	***	***	***	***
Urinalysis	31%	26%	29%	29%	48%	37%
Nutritional assessments	22%	18%	40%	16%	36%	43%
Lead assessment	***	***	***	***	***	***
Tuberculin testing	***	***	***	***	***	***
Anticipatory guidance	25%	28%	33%	20%	33%	33%
Interpretive conference	51%	49%	84%	51%	65%	82%

*This score includes a physical examination, immunization status, hearing screening, developmental assessments, hemoglobin/hematocrit, urinalysis, and TB testing.
**This score was not reported.
***This screening/test is not applicable for this age group.

Marked improvement in EPSDT rates for the adolescent population was evident in 2001. The results appear to reflect an increased emphasis on preventive care for adolescents.

Consistent across age categories (tables 4a–4d), there was marked improvement in the comprehensive EPSDT rate for 2001 compared to 2000. There was no consistent pattern of improvement or decline in the individual components in either FFS or the health plans.

The frequencies and mean numbers of EPSDT visits per year per child and rates of EPSDT service components that were documented in medical records for 2001 are reported near the end of the Results section, tables 10 and 11.

Question 3

Among all beneficiaries, and specifically among those who had received services, how were population characteristics related to EPSDT visit rates?

This section examines the distribution of children in the population according to membership in the four service subpopulations defined for the study. Tables show percentages of children in each subpopulation for age, gender, race, geography, and health plan membership. The data indicate which types of children throughout the state are more likely to receive EPSDT services based on enrollment and claims/encounter data for the entire population. The service subpopulations included:

- "EPSDT Services," meaning a comprehensive examination (physical examination, immunization status, hearing screening, developmental assessments, blood testing, urinalysis, TB testing, and lead assessment [for children under the age of 6.]);
- "Other Office Visit," representing non-EPSDT visits, frequently called "sick visits," or "follow-up visits";
- "Other Non-office Visit," including services provided by Medicaid outside an office setting, such as home health, hospital inpatient, ER, or long-term care; and
- "No Services," indicating that there was no record of care during the year.

Age and Service Subpopulation

Table 5 indicates that 356,897 children met the enrollment criteria. The table shows the number and percentage of children by age category in each service subpopulation.

Infants (birth through 1 year) were the most likely age group to receive EPSDT services during 2001 (78%). Older children and adolescents (ages 13 through 20) were more likely to be counted in the "other non-office visit" group. These percentages differ considerably from historical rates of EPSDT utilization for Michigan because those rates reported only children receiving office-based services in the denominator. As previously discussed, tables 4a–4d presented rates calculated from the sample with a comparison to historical rates, including only children with office-based services. Office-based services included services provided in physicians' offices and clinics. Clinics included public health facilities, federally qualified health centers (FQHCs), and school-based clinics. Only administrative data (claims and encounter records) were counted for school-based clinics; no medical records were abstracted.

According to claims and encounter records in the DSS, non-office-based services included home visits, inpatient hospital, ER, outpatient surgery, nursing facilities, independent laboratories, and

inpatient and partial hospitalization for mental health. Hospital inpatient, outpatient, and ER services accounted for 74% of non-office-based services.

Table 5. Michigan EPSDT population by age and service subpopulation.

	Service Criteria									
	EPSDT Services		Other Office Visit		Other Non-Office Visit		No Services		Total	
Age	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
Birth through 1 year	27,540	78%	2,866	8%	4,337	12%	778	2%	35,521	100%
2 Years	10,141	49%	5,213	25%	4,707	23%	810	4%	20,871	100%
3 Years	8,090	39%	5,639	27%	5,549	27%	1,289	6%	20,567	100%
4 Years	9,573	48%	3,943	20%	5,381	27%	1,231	6%	20,128	100%
5 through 6 Years	11,455	28%	12,347	31%	13,844	34%	2,836	7%	40,482	100%
7 through 9 Years	10,697	17%	21,418	33%	25,392	40%	6,451	10%	63,958	100%
10 through 12 Years	11,165	18%	19,627	31%	25,608	40%	7,361	12%	63,761	100%
13 through 14 Years	6,615	20%	9,674	30%	12,630	39%	3,847	12%	32,766	100%
15 through 16 Years	5,244	19%	9,140	32%	10,588	38%	3,220	11%	28,192	100%
17 through 18 Years	3,188	15%	7,530	36%	8,022	38%	2,364	11%	21,104	100%
19 through 20 Years	1,207	13%	3,924	41%	3,601	38%	815	9%	9,547	100%
Total	104,915	29%	101,321	28%	119,659	34%	31,002	9%	356,897	100%

Note: Table 5 is based on administrative data only and does not consider information from medical records.

EPSDT Participation by Type of Coverage

Children enrolled in FFS were slightly more likely than children in health plans to participate in EPSDT services (35% versus 27%), based on claims and encounter data. This difference is most likely related to incomplete reporting of encounter data by the health plan providers. EPSDT participation among children in managed care varied widely among the health plans. Appendix B shows EPSDT rates for each health plan.

There were children included in the sample from FFS who were also eligible to receive aid for their disabilities. Children in aid categories related to disability (i.e., Children with Special Health Care Services [CSHCS], and Supplemental Security Income [SSI] recipients) were less likely to participate in EPSDT services than other children. The rate for most SSI recipients was close to 20% (see Appendix C).

EPSDT Participation by Demographic Characteristics

Enrollment data from the DSS were analyzed to determine demographic characteristics related to participation in EPSDT services. U.S. Census designations were applied to the county of residence from the DSS to determine whether the county was rural or urban.

Table 6. Michigan EPSDT population by urban/rural geography based on county of residence and by service subpopulation.

Geography	Service Criteria								Total	
	EPSDT Services		Other Office Visit		Other Non-Office Visit		No Services			
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
Rural	17,866	30%	23,422	40%	14,310	24%	3,701	6%	59,299	100%
Urban	87,049	29%	77,899	26%	105,349	35%	27,301	9%	297,598	100%
Total	104,915	29%	101,321	28%	119,659	34%	31,002	9%	356,897	100%

Table 6 indicates that there was almost an equal participation rate in EPSDT services between children living in rural and urban areas. However, among children who did not receive comprehensive EPSDT services, rural children were more likely to receive "other office visits." Urban children were more likely to receive "non-office-based services."

Table 7. Michigan EPSDT population by gender and service subpopulation.

Gender	Service Criteria								Total	
	EPSDT Services		Other Office Visit		Other Non-Office Visit		No Services			
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
Female	52,218	30%	50,757	29%	57,961	33%	15,113	9%	176,049	100%
Male	52,697	29%	50,564	28%	61,698	34%	15,889	9%	180,848	100%
Total	104,915	29%	101,321	28%	119,659	34%	31,002	9%	356,897	100%

Table 7 indicates that males and females had almost equal EPSDT participation rates. The distribution across subpopulations was almost identical.

Table 8. Michigan EPSDT population by race/ethnicity.

Race	Service Criteria								Total	
	EPSDT Services		Other Office Visit		Other Non-Office Visit		No Services			
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate
American Indian	626	32%	702	36%	499	26%	119	6%	1,946	100%
African-American	43,653	26%	34,419	21%	69,194	42%	17,659	11%	164,925	100%
Caucasian	52,309	32%	58,725	36%	41,919	26%	9,859	6%	162,812	100%
Hispanic	5,322	31%	4,502	26%	5,183	30%	1,994	12%	17,001	100%
Migrant	60	41%	26	18%	36	25%	24	16%	146	100%
Unknown	1,501	29%	1,685	32%	1,458	28%	618	12%	5,262	100%
Other	1,444	30%	1,262	26%	1,370	29%	729	15%	4,805	100%
Total	104,915	29%	101,321	28%	119,659	34%	31,002	9%	356,897	100%

Table 8 includes an unduplicated count of beneficiaries included in the study and indicates that African-American children were less likely than other children to participate in EPSDT services (26% versus 29% overall), according to claims and encounter data. Additional demographic information can be found as Appendix D to this report.

Question 4 – High Risk Groups Needing Special Attention

What specific determinants of low EPSDT participation and specific high-risk groups could potentially be targeted for special interventions by the health plans or the state? (For example, which beneficiaries were likely to have very few or no preventive services? How did rates differ by geography, e.g., urban versus rural? What segments of the population may require special attention?)

Logistic multiple regression was used to focus on segments of each subpopulation that may be experiencing lower EPSDT rates. This form of statistical analysis matches one variable (the dependent variable) to many others (independent variables) at the same time. The results of the matching show which independent variable can predict the dependent variable.

Logistic multiple regression was applied to determine which of the patterns previously described were uniquely associated with or could predict the type of care a beneficiary would receive. Interactions among the demographic factors (race, age, gender, aid category, geography, and health plan versus FFS) were also investigated to examine the association of other variables with service utilization rates after risk adjusting for factors that influence service utilization.

Results indicated that aid category (chi-square 2383, $p<.0001$), the age-race interaction (chi-square 2294, $p<.0001$), and age (chi-square 1134, $p<.0001$) explained the most variability in whether children participated in EPSDT or other services. When other demographic factors such as aid category, age, and race were applied as risk-adjusters in the model, there were no meaningful differences between children in health plans and FFS. That is, the differences between health plan and FFS rates for EPSDT based on claims and encounter data could be explained almost entirely by differences in demographics between the FFS and managed care populations.

Further investigation of trends related to the significant effects and interactions in the models revealed:

<u>Adolescents</u>

- Adolescent females were more likely to utilize non-EPSDT office-based services.
- Adolescent males were more likely to utilize non-office-based services such as the ER (where no preventive services were provided).

<u>All Children</u>

- African-American and Hispanic children were more likely to utilize non-office-based services (where no preventive services were provided) compared to Caucasian and American Indian children.
- African-American children were most likely to utilize non-office-based services particularly if they resided in an urban setting.

Adolescents Compared to Younger Children

- Rural adolescents were more likely to utilize non-EPSDT office-based services (visits for sick care, etc.) than younger rural children.
- Urban adolescents were more likely to utilize non-office-based services (where no preventive services were provided) than younger urban children.

Question 5

To what extent may claims and encounter data be relied upon to monitor EPSDT service delivery? What is the level of agreement between claims/encounters and abstracted medical record data?

This section summarizes rates of completion of medical abstractions for the study and the relative contribution of medical records data to the final results. It presents findings from medical record abstractions for specific quality indicators. The relative contribution of medical records data to preventive visit rates and the number of preventive visits documented in medical records are assessed.

The study reviewed medical records for children receiving office-based visits (either EPSDT/ preventive services or other office visits). Children were classified as receiving "other office visit services" if their claims and encounter records indicated that they had office visits but no EPSDT/ preventive services during the year. The medical records for these children were abstracted to determine if there was any documentation concerning the provision of preventive care services that was not reported in claims or encounter records.

Figure 9. Preventive visit rates verified by medical records for the Medicaid population.

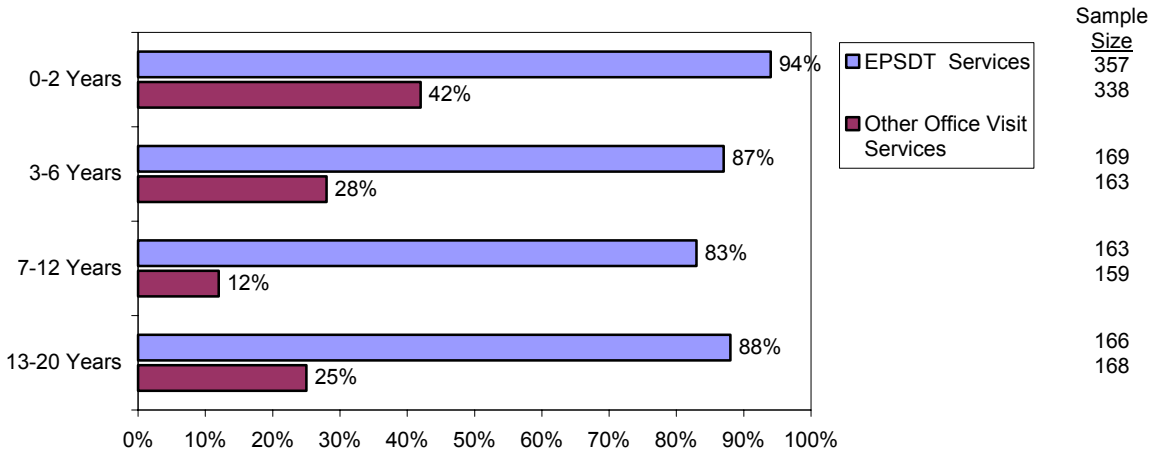


Figure 9 displays rates of preventive care documentation found in the medical records to substantiate:

- EPSDT coded visits that contained medical record documentation of EPSDT services; and
- "Other office visit services" (visits for services other than preventive care, such as a sick visit) that contained medical record documentation of EPSDT services.

The rates shown in the figure averaged results across the health plans and the FFS programs.

Among all age groups presented in Figure 9, 83%–94% of the EPSDT visits found in claims and encounter data were substantiated by documentation found in the medical records. Because a claim or encounter had been submitted for EPSDT services for 100% of these beneficiaries, one would expect to find documentation for EPSDT services in all of those medical records.

For the other office-based services, one would expect to find no documentation for EPSDT services because none was found in the claims and encounter data. However, the medical records verified that from 12% to 42% of the other visits contained documentation of providing EPSDT services during the visit for non-preventive (i.e., sick visit, follow-up visits, etc.) services.

Further investigation of trends in the population with other office-based services indicated that preventive care was uncounted to a greater degree for African-American and urban children. Preventive visits were better documented for children with EPSDT services in rural counties than in urban counties. It appeared that providers in urban areas were less likely to submit claims or encounter records for preventive services. This under-reporting of EPSDT services may be explained by the payment system arrangements (i.e., FFS or capitation) for these providers. Use of claims and encounter data exclusively to determine EPSDT rates would underestimate the rates, particularly for African-American children and children in urban areas.

Table 9 shows counts of EPSDT-related services according to medical records and claims data, demonstrating the level of agreement between medical records and claims. Column A shows the un-weighted sample size. Columns B and C show counts of instances where services were only documented in medical records or claims/encounters, but not both. Columns D and E show instances where services were documented in both data sources or in neither. Column F shows the percent agreement between medical records and claims/encounters (column D plus column E divided by column A).

Table 9. Comparison of medical records and claims/encounter data.

Component	A Sample Size	B In Medical Records Only	C In Claims and Encounters Only	D In Both Medical Records and Claims/ Encounters	E Not in Medical Records nor Claims/ Encounters	F Percent Agreement
Physical exam	1,683	467	55	783	378	69%
Immunization status	1,683	343	40	998	302	77%
Hearing screening	1,683	291	104	768	520	77%
Developmental assessments	1,683	363	64	776	480	75%
Blood testing	1,683	221	164	883	415	77%
Urinalysis	1,683	249	113	860	461	78%
TB testing	1,683	266	101	755	561	78%
Lead assessment*	963	163	38	491	271	79%

*Lead assessment applied only to children under the age of 6.

In all areas but one there was a 75% or higher rate of agreement between medical records and claims/encounters. Agreement was lowest for physical exams. There is more information in the medical records concerning EPSDT components than was found in claims/encounter data. This rate may again reflect the payment system arrangements (i.e., FFS or capitation) for the providers.

There were no procedure codes available in claims or encounter data to document initial/interval history, height, weight, head circumference, blood pressure, physical examination, dental screening, nutritional assessments, anticipatory guidance, and interpretive conferences. No comparison could be made for those components. Furthermore, these services are considered bundled in claims and encounter data submitted as preventive visits.

Table 10 compares the percentage of beneficiaries showing at least one EPSDT visit in the claims/encounter data with the percentage of EPSDT visits found in the medical records. It also includes mean visit rates (as found in the medical records) for beneficiaries with EPSDT visits in claims/encounter data.

Table 10. Non-agreement rate for preventive visits comparing medical records to claims/encounter data showing EPSDT visits, and mean visits rates.

Service Group 1 (EPSDT Only)			
Preventive Visits	Statewide (n=855)	FFS (n=408)	Health Plans (n=447)
0	11%	13%	11%
mean visits (per child)	1.57	1.74	1.54

Statewide, 11% of the children whose claims or encounter data coded an EPSDT visit during the study year did not receive an EPSDT visit according to their medical record documentation. Because the claims/encounter data were coded with an EPSDT visit for these beneficiaries, 100% of the medical records should have contained documentation to substantiate EPSDT visits. FFS children averaged 1.7 EPSDT visits during the study period (according to the medical record documentation), and health plan children averaged 1.5 EPSDT visits.

Table 11 compares the percentage of beneficiaries showing no EPSDT visits in the claims/encounter data with the percentage of EPSDT visits found in the medical records. It also includes mean visit rates (as found in the medical records) for beneficiaries with no EPSDT visits in claims/encounter data.

Table 11. Non-agreement rate for preventive visits comparing medical records to claims/encounter data showing no EPSDT visits, and mean visits rates.

Service Group 2 (Other Office Visits)			
Preventive Visits	Statewide (n=828)	FFS (n=398)	Health Plans (n=430)
1 through 8	22%	30%	21%
mean visits (per child)	0.29	0.53	0.24

Statewide, 22% of the children showing only non-EPSDT visits in their claims/encounter data had medical record documentation to support a comprehensive EPSDT visit during the year. Because the claims/encounter data were coded with no EPSDT visits for these beneficiaries, none of the medical records should have contained documentation to substantiate EPSDT visits. This non-match rate was 30% for FFS and 21% for health plans. This rate may, again, reflect the payment system arrangements (i.e., FFS or capitation) for the providers.

Table 12. Percentages of children having EPSDT/preventive services according to medical records.

Service Criteria	Component	Statewide		FFS		Health Plan	
		Sample Size	Percent	Sample Size	Percent	Sample Size	Percent
EPSDT	Physical examination	855	94%	408	92%	447	94%
	Immunization status	855	96%	408	95%	447	96%
	Hearing screening	855	90%	408	89%	447	90%
	Developmental assessments	855	92%	408	92%	447	93%
	Blood testing	855	91%	408	89%	447	91%
	Urinalysis	855	91%	408	89%	447	92%
	TB testing	855	89%	408	87%	447	89%
	Lead assessment*	506	92%	245	91%	261	92%

*Lead assessment applied only to children under the age of 6.

Almost 90% of children with EPSDT visits reported in claims/encounters had a comprehensive EPSDT visit in their medical record documentation during the study year. This would indicate that, for children with preventive visits reported in claims or encounter records, overall quality of EPSDT documentation is very high. The medical record documentation indicates that the majority of EPSDT visits contain the components to support a comprehensive visit.

Discussion

Highlights

Strengths

- Almost 100% of all Medicaid children in the study received some type of preventive service in 2001.
- The quality of documented EPSDT services was very high (over 90% with the comprehensive components).
- There was a 75% or greater agreement rate between medical records documentation and claims/encounter data for seven of the eight EPSDT components reviewed.

Opportunities for Improvement

- EPSDT participation rates were lower for urban, African-American, and Hispanic adolescents compared to younger ages.
- Adolescent females were more likely to use office-based services (for both EPSDT and non-EPSDT services) while adolescent males were more likely to use non-office-based services (which do not provide EPSDT services) such as the ER.

Analysis of enrollment and claims/encounter data from the DSS for the entire EPSDT eligible population, children age 0 through 20, indicated that infants have the highest rates of comprehensive EPSDT services and that rates decline progressively with age. The rates for children having non-office-based services such as ER, hospital inpatient, or home health services appear to increase with age. This trend is most pronounced for African-American and urban children. This trend was also apparent for both urban and rural Hispanic children.

Medical record abstraction revealed that many children with no claims or encounter data evidencing a comprehensive EPSDT preventive visit are actually getting services that would qualify as EPSDT according to the medical records. Efforts by the state to build relationships with the health plans and the FFS system and to promote the delivery of EPSDT services appeared to be translating into higher rates statewide, as shown by the improvements in overall rates over the past three years.

Compared to previous years, EPSDT rates and rates for specific components of preventive care remained stable or improved. Marked improvement was apparent for physical exams, developmental and nutritional assessments, and interpretive conferences. This held true for all age groups, including adolescents. Claims and encounter data did not show the full extent of improvement over time. Much of the improvement seen was evident in preventive service components, such as developmental assessments, that are not specifically reported in claims or encounter records. Rather, this information was obtained through medical record abstraction. The improvement seen may have

been due to statewide efforts to promote preventive services and educate providers about the importance of EPSDT.

EPSDT participation rates for children with disabilities (less than 20%) were markedly lower than for other populations, a situation most likely linked to their problem-focused health status. With serious disease problems and/or functional limitations, wellness issues may not be the primary concern. For children with disabilities care is often under the oversight of specialists who have a disease-specific treatment focus, not the more general perspectives of a primary care provider. However, it is important for this group of children that wellness and prevention services become an integral part of their health care, to prevent complications and secondary disabilities while improving their general overall health.

Participation rate differences between the FFS system and health plans followed no consistent pattern. FFS had slightly higher overall EPSDT rates. This has been a consistent pattern over the past three years. The higher rates seen in FFS appear partly due to higher rates of reporting claims. This could be due to the financial incentive to file claims in the FFS system.

Lead assessment rates were higher in health plans than in FFS (30% versus 20%). The national rate for lead assessments for children on Medicaid age 1 to 5 is 19% (GAO, 2001). Individual statistics vary widely. Rates appear to be associated with factors such as mandated screening without regard to insurance coverage, mandated reporting, or free testing (Whitmire, Norman, Ward, & Rey, 2001). Michigan's rates for children on FFS Medicaid are in keeping with the national trend, while children in health plans have a much higher rate.

Recommendations

- Increase education to Medicaid providers and beneficiaries about the value of EPSDT for the general population and especially for children with disabilities.
- Focus EPSDT educational efforts on the African-American and Hispanic populations.
- Continue efforts to bring together providers, health plans, schools, and local health departments that provide EPSDT services.
- Improve data quality and encourage health plan providers to report preventive visits in claims and encounter records.
- Conduct an encounter and claims validation study.
- Expand encounter data and integrate the data quality process.
- Explore best practices in health plans with higher EPSDT rates.

Additional efforts are needed to improve data quality and to encourage both FFS and health plan providers to report preventive visits in claims and encounter data. The state should consider conducting an encounter and claims validation study, similar to an audit, where random samples of beneficiaries are selected and reporting of information on claims and encounter records is verified through line-by-line medical record abstraction. Encounter data validation should be expanded and become integrated into the data quality improvement process, including feedback to the health plans on performance in medical record validation studies.

While implementing the sampling methods for this study, researchers encountered deficiencies in the tracking of providers that became a barrier to locating medical records in FFS. The problem of identifying providers was even greater in the health plans but did not become a barrier to locating records because the health plans themselves contacted providers using their own provider tracking systems.

The challenges that lay ahead for EPSDT in Michigan include sustaining the momentum of progress that is evident in the data over the past three years while targeting additional quality improvement efforts with high-volume providers to address the needs for preventive care among urban and minority children and adolescents.

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