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WORKSHOP IN HEALTH ADMINISTRATION STUDIES

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"Preventive Care for Children under Medicaid: Subsequent Use, Cost & Quality Outcomes"

WORKSHOP PAPER

for

Thursday, April 27, 1989

Rosenwald 405

3:30 - 5:00 p.m.

PREVENTIVE CARE FOR CHILDREN UNDER MEDICAID:  
SUBSEQUENT USE, COST & QUALITY OUTCOMES

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The purpose of this project is to see if we can begin to document an effect of preventive care, for children under Medicaid, on patterns of use of services, expenditures for care, and quality of care measures in subsequent years. Ideally, we would like to find that those children who received more preventive care have more ambulatory care visits but fewer emergency room visits and fewer hospital admissions. We would also like to find that their total expenditures for care under Medicaid are lower. Finally, on several indicators of quality of care received we would like to find that the children who received preventive care did better.

A second goal of this project is simply to document more clearly than heretofore the amount of preventive care received by children under Medicaid and some of the characteristics by which that care varies. Finally, we hope to identify some of the characteristics of children and the Medicaid systems they use that lead to receiving preventive care.

This study is financed by a cooperative agreement between the Health Care Financing Administration (HCFA) and the American Academy of Pediatrics. Systemetrics, Incorporated, is a subcontractor on the project, responsible for executing the data analyses.

To date, preliminary descriptive analyses have been executed, and we have defined a model for multivariate analyses to look at the possible effects of preventive care on the outcomes of interest.

### The Data

The data are from the California Medicaid program, or Medi-Cal. The basic data, defining the universe, is a file created by Systemetrics under the Tape-to-Tape program, a project funded by HCFA. Under the Tape-to-Tape program, Systemetrics has been compiling Medicaid eligibility and claims data from five states into a uniform data set for use in research. The five states originally in the program are: California, Georgia, Michigan, New York and Tennessee. The data compiled under the Tape-to-Tape project do not include the data on preventive care services under the Early and Periodic Screening, Diagnosis and Treatment (EPSDT) program, so it was essential for this project to be able to add these data to the Tape-to-Tape files. This limited the states in which the project could be executed to California and Georgia, since these data could not be acquired from the other states. HCFA requested that the project be tried in one state, at least initially. California was chosen because it had a broad enough program, in terms of services, that it was likely that almost all the care Medi-Cal enrollees received would be reimbursed by Medi-Cal and therefore recorded in the Medi-Cal files. Moreover the number of enrolles in California is vast enough that

indicators could be used for some measures that were based on relatively rare events. Finally, the office that administered the EPSDT program in California, which is called Child Health and Disability Prevention (CHDP), was interested in the project and willing to make the CHDP data available.

To complete the database used for this study, Systemetrics selected all children between ages 0 and 15 who were on the Medical rolls for the entire year of 1981 (children enrolled in Medical only part of the year are not included, because we needed a complete picture of care received). At the time the study began Systemetrics had data for the years 1981 through 1984. The population of children was divided into two groups, those who were enrolled all of 1981 but not continuously after that and the group who were enrolled continuously in 1981 through 1984. The second group is called the "continuously enrolled" group in this analysis and the first group is the "discontinuously enrolled" group. Then files for the continuously enrolled group were linked across the four years and records of services received under CHDP were integrated with the services on the Tape-to-Tape file.

The continuously enrolled group is used for the analyses of possible effects of preventive care on the outcomes of interest. Both the continuously enrolled and discontinuously enrolled groups are analyzed for 1981 with regard to characteristics of the population that are related to the receipt of preventive care

as well as other care under Medi-Cal. The continuously enrolled children are a minority of the Medi-Cal eligibles, and one might expect them to be different from the majority of Medi-Cal children. The discontinuously enrolled children are compared to them not only in order to better describe the patterns of care of Medi-Cal children as a whole, but also to see to what extent analyses based on the continuously enrolled population might have external generalizability to the group of Medi-Cal children as a whole.

#### Variables and Methods

The critical variable in this analysis is preventive care. Measures of preventive care include preventive care visits--summed over visits for preventive services under the CHDP program as well as visits for preventive care billed under the regular Medi-Cal program--and services, which is more appropriately used as a base for preventive care expenditures. Preventive care is the dependent variable in the descriptive data comparing the continuously and discontinuously enrolled children and the key independent variable in later analyses to detect possible effects of preventive care on other outcomes of care.

Other key variables include demographics, including age and sex (unfortunately race or ethnicity are not collected by the Medi-Cal program); type of eligibility under the program; and urban-semi-urban-rural residence, as predisposing characteristics of the population. Illness characteristics are measured with a

variety of diagnostic codes, so that children with injuries over the four years are identified as well as children with acute illnesses, selected chronic illnesses, and pregnancies.

Intervening variables that have been constructed because they may affect some of the outcomes of care that will be examined include the specialty of the modal provider of care, the modal site of care, and continuity of care. The first two variables identify the modal provider of care and the modal site of care over all the visits received over the years 1981 through 1983. The last variable is calculated as the total number of visits to the Grant Modal Provider divided by the total number of visits from 1981 through 1984.

Dependent variables for the analysis of outcomes in the fourth year (1984) include several measures of utilization of services and several expenditures variables, as well as a set of indicators of adverse care for children with selected illnesses or diagnoses. These will be described in the workshop.

For the first phase of the analysis percentages describing recipients of preventive care will be presented. For the analysis of outcomes, the multivariate analysis will use both logistic and ordinary least squares regression as well as, possibly, a weighted least squares regression procedure or a nonlinear regression procedure more appropriate for the analysis of counts of visits. The preventive care and provider based independent variables will be calculated over the years 1981 through 1983, and regressed on dependent variables for 1984.

Originally plans included a multivariate analysis of the amount of preventive care received in the first year. However we soon realized that there were too few variables that could be used for this analysis for which the interpretation would be unambiguous. Instead, we plan to model preventive care in the fourth year as a separate analysis, using a similar set of variables to those used for the outcome measures. This will permit us to make some conjectures about the determinants of preventive care, but unfortunately we will not be able to combine this analysis with the outcome analysis to more precisely estimate the effects of preventive care on the outcomes measured.

#### Preliminary Results

Attached are tables showing initial, descriptive data, for the first phase of the analysis. These tables generally document a similarity between the continuous and discontinuous groups, although there are some differences.

Table 1 compares the groups on eligibility (Aid) category, sex, urban-rural county of residence, and modal provider type. Children from the continuous group are more likely to be in the Aid to Families of Dependent Children (AFDC) category than are the discontinuous. The modal provider of the discontinuous group is more likely to be unspecified or missing on the file and is for 1981 only, whereas for the continuous group it is defined for 1981-1984. The differences in the values for chronic illness, acute illness, and accidents are at least partly due to the fact

that, for these variables, the existence of the condition is defined over the four year period for the continuous group but only in 1981 for the discontinuous. The same is true for pregnancy, so it is important to note that the discontinuous must have a higher pregnancy rate, since 4.7 percent of them are pregnant in 1981 compared to 4.1 percent for the continuous group over the entire four year period.

Table 2 provides information on the number and percent of children with different amounts of well-child visits by enrollment group. Values are quite similar for the two groups. It is noteworthy that 60 percent do not receive any well-child visits, despite the CHDP program that provides well-child visits for nearly every age.

Table 3 compares the infants on preventive care visits with all others. The infants in the discontinuous group are somewhat more likely not to have preventive care visits, 50 percent versus about 30 percent for the continuous group. Both figures reflect underutilization in light of the high number of preventive care visits recommended and covered by the CHDP protocol for this group.

Table 4 presents the percent of enrollees receiving services by age and enrollment status for the continuous group. Unfortunately, there is no way to identify true eligibles as a denominator for Medicaid studies, since many who would be eligible do not know it and do not enroll. They tend to become



enrolled when there is a need to see a doctor. Therefore, most of the children on the file do receive some services in a given year. This table documents that fact for all groups.

Table 5 is similar to Table 4 but provides the data for those receiving preventive care services only. This is a smaller percentage of the enrollees. However, it is still a large percent compared to the percent who receive preventive care visits. Apparently many children receive services (e.g. immunizations) but not preventive care visits in the course of a year.

Table 6 presents the modal site for preventive health visits for the continuous and discontinuous groups. The distributions are quite similar, but unfortunately a large percent received care in an unnamed source.

Table 7 presents the modal type of provider of CHDP visits for the continuous and discontinuous groups. The distributions are similar, with the plurality of visits to pediatricians for those who had visits.

In conclusion, this brief paper provides some description of the population that is being analyzed for clues as to the effects of preventive care on subsequent utilization, costs, and quality outcomes.

The workshop will review some of this information and then focus on analysis plans for the outcome analysis, including the measures to be used, the analytic methods, some of the problems encountered and types of conclusions expected.

Table 1  
Demographic analyses by enrollment group

		<u>Continuous</u>		<u>Discontinuous</u>
<u>Number of children</u>		270,105		384,776
<u>Aid category</u>				
	AFDC-Categorically Needy, cash assistance	87.8%		71.1%
	AFDC-Categorically/Medically Needy, no cash assistance	2.8		11.1
	Disabled	2.8		0.9
	Other	6.1		15.7
	Not classified	0.5		1.2
<u>Sex</u>				
	Male	50.7%		51.3%
	Female	49.3		48.7
<u>Urban/rural</u>				
	Rural	5.9%		6.3%
	Semi-urban	29.5		27.2
	Urban	64.6		66.4
* <u>Grand modal provider type</u>				
	Pediatrician	30.1%		21.1%
	Other primary care	26.7		7.9
	Int/OB-GYN	2.2		0.3
	Specialty M.D.	5.7		0.4
	Non-M.D.	21.9		8.4
	Unspecified	11.5		40.1
	Missing	1.8		21.6
<u>Age</u>				
	Less than 1	9.9%		22.0%
	Mean age	$\bar{x} = 6.5$		$\bar{x} = 6.1$
Hospital discharges-				
	1981	15,060	5.6%	30,010
				7.8%
* Chronic Illness				
	Claims 1981-1984	32,254	11.9%	13,613
				3.5%
* Acute Illness				
	Claims 1981-1984	90,291	33.4%	40,134
				10.4%
* Injuries				
	Claims 1981-1984	156,436	57.9%	80,399
				20.9%
* Pregnancy				
**	Claims 1981-1984	11,122	4.1%	17,964
				4.7%

\* For the discontinuous group grand modal provider types and illness claims are for 1981 only.

\*\* NOTE: Pregnancy claims include some codes for newborn care as well as pregnancy.

C.

Table 2

Number and percent of children with well child visits  
by enrollment group, 1981

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<u>Total well child visits</u>	<u>Continuous</u>		<u>Discontinuous</u>	
	(N)	(%)	(N)	(%)
0	161,985	(60.0)	247,040	(64.2)
1	64,750	(24.0)	80,728	(21.0)
2	22,619	(8.4)	28,762	(7.5)
3	10,189	(3.8)	13,998	(3.6)
4	5,399	(2.0)	7,262	(1.9)
5	2,588	(1.0)	3,489	(0.9)
6	2,575	(1.0)	3,497	(0.9)
<b>Total</b>	<b>270,105</b>	<b>(100.0%)</b>	<b>384,776</b>	<b>(100.0%)</b>

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D.

Table 3

Number and percent of infants vs. all others with preventive care visits by enrollment group, 1981

<u># of preventive care visits, 1981</u>	<u>Infants (&lt;1)</u>		<u>All other children (&gt;1)</u>	
	<u>Continuous</u> (N) (%)	<u>Discontinuous</u> (N) (%)	<u>Continuous</u> (N) (%)	<u>Discontinuous</u> (N) (%)
0 visit	7,886 (29.6)	42,425 (50.0)	154,099 (63.3)	204,615 (68.1)
1 visit	4,745 (17.8)	14,682 (17.4)	60,005 (24.6)	66,046 (21.9)
> 1 visit	13,995 (52.6)	27,365 (32.4)	29,375 (12.1)	29,643 (10.0)
Total	26,626 (100.0)	84,472 (100.0)	243,479 (100.0)	300,304 (100.0)

30% of continuous infants (<1) and 50% of discontinuous infants had no preventive care visits in 1981.

Data from output 2/8/89  
RE08142A & B

Table 4

## Percent of Enrollees receiving services by age and enrollment status, continuous 1981

	<u>Recipients</u>		<u>Eligibles</u>		<u>AFDC Cash</u>		<u>AFDC No Cash</u>		<u>Other</u>		<u>Disabled</u>	
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
Under 1	23,262	25,268	92.1	20,863	92.3	786	88.1	1,608	91.2	5	100.0	
1 - 4	73,127	76,988	95.0	66,835	95.0	1,246	95.6	3,975	95.0	1,071	98.6	
5 - 8	62,707	68,883	91.0	55,907	90.8	1,364	92.5	3,659	91.5	1,777	96.6	
9 - 12	58,772	67,259	87.4	50,772	86.9	1,930	90.1	3,690	87.7	2,380	94.7	
13 - 15	26,842	30,349	88.4	21,256	88.2	1,507	88.3	2,023	86.9	2,056	93.3	
Total	244,710	268,747	91.0	215,633	90.9	6,833	90.9	14,955	90.7	7,289	95.3	

Data come from Binder 3; Run # 2

Most enrollees receive services independent of age or enrollment status,  
 More disabled kids receive services than any other group (95.3%)

Percent of Enrollees receiving preventive care services by age and enrollment status, continuous 1981

	<u>Recipients</u>		<u>AFDC Cash</u>		<u>AFDC No Cash</u>		<u>Other</u>		<u>Disabled</u>	
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
Under 1	19,387	76.7	17,405	77.0	627	70.3	1,351	76.6	4	80.0
1 - 4	51,848	67.3	47,318	67.2	924	70.9	2,990	71.5	616	56.7
5 - 8	44,883	65.2	40,004	65.0	1,020	69.2	2,821	70.6	1,038	56.4
9 - 12	37,883	56.3	32,492	55.6	1,326	61.9	2,681	63.7	1,384	55.1
13 - 15	16,348	53.9	12,932	53.6	895	52.4	1,365	58.6	1,156	52.4
Total	170,356	63.4	150,151	63.3	4,792	63.7	11,208	68.0	4,198	54.9

About 2/3 of kids receive preventive care. Older kids are consistently likely to receive preventive care. Disabled kids are least likely to obtain preventive care.

M.

Table 6

## Modal site of preventive health visits

	<u>Group Types</u>			
	<u>Continuous</u>		<u>Discontinuous</u>	
	(N)	(%)	(N)	(%)
No preventive health care	161,986	60.0	247,043	64.2
Physician service site unknown	41,985	15.5	53,230	13.8
Other site	23,833	8.8	31,312	8.1
Office	19,078	7.1	25,305	6.6
Clinic	7,870	2.9	9,574	2.5
Hospital	5,466	2.0	7,994	2.1
Non-physician site	2,426	0.9	3,136	0.8
Missing	7,461	2.8	7,182	1.9
Total	270,105	100.0	384,776	100.0

RE08134C,D

Binders 3,4 Run # 6

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Table 7

Number and percent of children with CHDP visits  
to different provider types by group, 1981

<u>Provider type</u>	<u>Group Types</u>			
	<u>Continuous</u>		<u>Discontinuous</u>	
	(N)	(%)	(N)	(%)
Pediatrician	45,701	16.9	64,436	16.7
Other Primary Care	12,276	4.5	12,148	3.2
Internist, OB/Gyn	377	0.2	418	0.1
Specialists	821	0.3	947	0.2
Non-physician providers	14,217	5.2	18,762	4.9
Unspecified providers	28,746	10.6	33,058	8.6
No CHDP visits	167,967	62.2	255,007	66.3
Total	270,105	100.0	384,776	100.0