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Disruptions in Insurance Coverage: Patterns and Relationship to Health Care Access, Unmet Need, and Utilization Before Enrollment in the State Children's Health Insurance Program

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ABSTRACT

BACKGROUND. The numbers and types of disruptions in insurance that children experience and the effects of these disruptions on health care measures have not been well characterized.

OBJECTIVES. Our goals were to (1) describe the number and patterns of insurance disruptions within a population of children newly enrolling into the State Children's Health Insurance Program and (2) assess the relationship among insurance disruptions and sociodemographic characteristics of these children and their families to specific measures of access to care, unmet need, and health care utilization during the year before enrollment.

METHODS. We conducted telephone interviews in families with children newly enrolling in the State Children's Health Insurance Program. Families reported on measures for each of the 12 months preceding enrollment. They were grouped by number of insurance disruptions in the year before enrollment: continuously uninsured, ≥ 2 disruptions, 1 disruption, or continuously insured.

RESULTS. Of 920 families contacted, 739 (80%) completed the interview and 710 had useable data. Thirty-five percent reported being continuously uninsured, 42% were intermittently insured (≥ 2 disruptions: 28%; 1 disruption: 14%), and 23% were continuously insured during the previous year. The most common patterns of change were between privately insured and uninsured (49%) and Medicaid and uninsured (40%). The continuously uninsured were more likely to be Hispanic and older in age. Multivariate modeling confirmed a gradient between greater insurance disruption and less access to care, less utilization, and greater unmet medical need. Using the continuously uninsured as a reference group, the adjusted odds ratio for having a medical home varied from 2.5 for those with ≥ 2 disruptions

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Key Words

disruptions, insurance gaps, churning, uninsured, SCHIP

Abbreviations

SCHIP—State Children's Health Insurance Program

CU—continuously uninsured

CI—continuously insured

CICP—Colorado Indigent Care Program

FPL—federal poverty level

OR—odds ratio

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to 4.5 for the continuously insured and from 1.9 to 3.2, respectively, for using any regular/routine care. The odds ratio for unmet need for a prescription medication was 0.9 for ≥ 2 disruptions and 0.5 for those with continuous insurance coverage.

CONCLUSIONS. There was significant disruption in insurance coverage in the year before State Children's Health Insurance Program enrollment. Most of these disruptions took the form of children previously enrolled in either Medicaid or private insurance becoming uninsured. Increasing numbers of disruptions were associated with less routine care and greater unmet medical need. These findings suggest that disruptions in insurance coverage for children should be minimized with the adoption of policies regarding continuous eligibility criteria for Medicaid and streamlining transitions between Medicaid, the State Children's Health Insurance Program, and private insurance.

CHILDREN WITHOUT HEALTH insurance are at increased risk for poor access to health care^{1,2} and are less likely to have a usual source of care, more likely to experience long wait times, and use less physician services.³ However, simply measuring those without insurance coverage at a specific point in time does not tell the whole story. A number of studies have attempted to measure the health effects of the lack of insurance on children, but many exclude the portion of the population that has a gap in coverage so is neither insured nor uninsured over the course of an entire year. It is estimated that 6.6 million children remained completely uninsured throughout 1999, but an additional 11.4 million were uninsured for some part of that year.⁴ Inclusion of these children could significantly alter estimates of the impact of health insurance on utilization and unmet needs.⁵⁻⁹ Gaps in insurance coverage have been associated with poor health outcomes in children, problems with access, and patterns of inadequate utilization.⁶⁻¹¹

Much less is known about insurance instability as specifically measured by the number of disruptions in coverage and the net effect of those disruptions on health care delivery. One study reported that insurance transitions, which include a period of no coverage, were associated with postponed care and prescriptions.¹² A recent analysis of the National Immunization Survey found that children who experienced a disruption in coverage in the year before the survey had lower vaccination coverage as compared with those with continuous insurance.¹³

We sought to better characterize patterns of insurance disruptions for children and the associations of these disruptions on several measures of health care delivery. The objectives of our study were to (1) describe the

number and patterns of insurance disruptions within a cohort of children newly enrolling into the State Children's Health Insurance Program (SCHIP) and (2) assess the relationship among insurance disruptions and sociodemographic characteristics of these children and their families to specific measures of access to care, unmet need, and health care utilization during the year before enrollment. Better characterization of the effects of insurance disruptions on care could help to inform policy makers.

METHODS

Study Design and Population

Between February and May 2002, we conducted a telephone survey of families in Colorado who had enrolled a child in SCHIP for the first time. Families were selected randomly from a computer database and were limited to first-time SCHIP enrollees who had enrolled within 2 months of the survey, either English or Spanish speakers. The survey was completed by the adult family member who "knew the newly enrolled child best." The study protocol was approved by the Colorado Multiple Institutional Review Board.

Survey Tool and Methodology

The survey incorporated standardized questions with minor modifications from several instruments: the Consumer Assessment of Health Plans Child Core, the Prototype Children's Health Insurance and Health Care Questionnaire form, the National Health Interview Survey Household survey, the National Survey of Children's Health module from the State and Local Area Integrated Telephone Surveys of the National Center for Health Statistics, and previously piloted questions, all of which have been previously used and described by the study team.¹⁴⁻¹⁶ The survey was conducted by the AMC Cancer Research Center Survey Core in Denver, Colorado. The interview was programmed for computer-assisted telephone interviewing and included skip patterns, acceptable range of responses, and consistency checks. At least 15 attempts were made to contact selected families to optimize the response rate. Interviewers were trained on general interviewing skills and specific issues related to the survey. More than 10% of all interviews performed were monitored randomly by using Local Area Network Assist Plus software.

All interviews were conducted in either English or Spanish on the basis of the preference of the families contacted. Families were asked to report on the preceding 12 months, corresponding to the year before (pre) SCHIP enrollment. Insurance status specifically was asked for each month of the preceding (pre-SCHIP) 12 months. Thus, we assessed sociodemographic characteristics at the time of enrollment, and globally assessed perceived health care access, unmet need, and utiliza-

tion over the preceding year, and insurance status monthly over the preceding year. The survey tool and methodology for this study have been described in greater detail previously.^{14,15}

Definition of Measures

Insurance disruption was defined as any month within the 12-month period before SCHIP enrollment in which the enrolled child experienced a change in insurance coverage as compared with the previous month and included a period of no coverage. Total number of disruptions could potentially range from 0 to 12. A disruption included a change between any of the following insurance types: private insurance, Medicaid, Military/VA, the Colorado Indigent Care Program (CICP), uninsured, or other. The CICP is not a traditional insurance program but, rather, a financial resource used to reimburse providers at a discounted rate for the care of non-Medicaid indigent residents of Colorado. It is a method of payment that subsidizes the reimbursement to providers and limits the individual out of pocket maximum.¹⁷ However, for the purposes of this analysis, it was treated as a separate insured category.

Race and ethnicity of children were based on report of parents and categorized as 1 of the following: white, black/African American, Asian/Pacific Islander, American Indian/Alaskan Native, and other, with separate reporting regarding whether the child was of Hispanic origin. Thus, race/ethnicity was summarized as non-Hispanic white, black, Hispanic, or other (which included all categories not otherwise summarized).

Percent of federal poverty level (FPL) was calculated on the basis of self-reported family income and size.¹⁸

Access-to-care indicators included the presence or absence of a medical home ("was there one particular place that he/she usually went when he/she needed routing or preventive care"), whether there had been an attempt to have the child seen for regular/routine care during the past year, and whether there was an identified primary care provider ("a personal doctor or nurse is the health professional who knows child best").

Unmet medical need included whether the child "needed but could not get": prescription medications, regular/routine care visits, or sick/injury visits.

Utilization was assessed by using a report that the child "received any regular/routine care" or "any sick/injury care" during the previous year.

Data Analysis

Children were categorized according to the number of insurance disruptions they experienced over the previous 12-month period. Categories included being (1) continuously uninsured for all 12 months (CU), (2) intermittently insured, which was further subclassified between ≥ 2 disruptions (≥ 2) and 1 disruption (1); or (3) continuously insured for all 12 months (CI). Compari-

sons were made of each of the sociodemographic, access, unmet need, and utilization measures across each of the insurance disruption strata by using χ^2 and, when appropriate, Mantel-Haenszel analysis for trend.

We first conducted bivariate analyses and considered variables with bivariate *P* values that were $< .25$ to be eligible for multivariate analysis. Bivariate analyses were performed by using the McNemar test for paired data for all binary categorical variables. Individual multivariate logistic regression was then performed to assess the association of insurance disruptions with a preselected major outcome variable in the areas of access, unmet need, and utilization and adjusting for predictor variables. The specific outcome variables were: had medical home, needed but couldn't get prescription medicine, having any regular/routine care. Given the prevalence of the outcomes, some resulting odds ratios (ORs) may be overestimated. Nonsignificant variables were removed sequentially from the model, starting with the most nonsignificant variable. Variables in the final model had *P* values of $< .05$. Estimates were checked at each step for evidence of confounding, but none was found. SAS 9.1 (SAS Institute, Cary, NC) was used.

RESULTS

Of 920 families initially contacted, 739 completed the interview, resulting in a response rate of 80%. Of those 739, 710 (96%) had useable insurance information and were included in the analysis. In reference to insurance status over the 12 months before SCHIP enrollment, 250 (35%) reported being uninsured for the entire year, 295 (42%) were intermittently insured, and 165 (23%) were continuously insured. Of those insured all year ($n = 165$), 45% reported only being on Medicaid, 39% were only privately insured, and the remaining 16% had another type of insurance, such as military/Veteran Affairs, the CICP, or > 1 type of insurance. Among the continuously insured, 11 children had > 1 type of insurance, and only 5 reported a switch between privately insured and a public form of insurance (1 from private to the CICP and 4 from private to Medicaid). Thus, it was extremely uncommon for children to shift from private coverage to public coverage without experiencing a disruption.

Number and Type of Insurance Disruption

Overall, 415 (59%) children had no insurance disruption either because they were continuously insured or continuously uninsured. Of the 295 children who were intermittently insured, 98 (33%) had 1 disruption, whereas 197 (67%) underwent ≥ 2 disruptions. Among those with ≥ 2 disruptions, only 6 families experienced > 2 disruptions. The mean number of disruptions was 1.7 (SD: 0.5).

As shown in Fig 1, a majority of the intermittently insured switched either between privately insured and uninsured (49%) or between Medicaid and uninsured

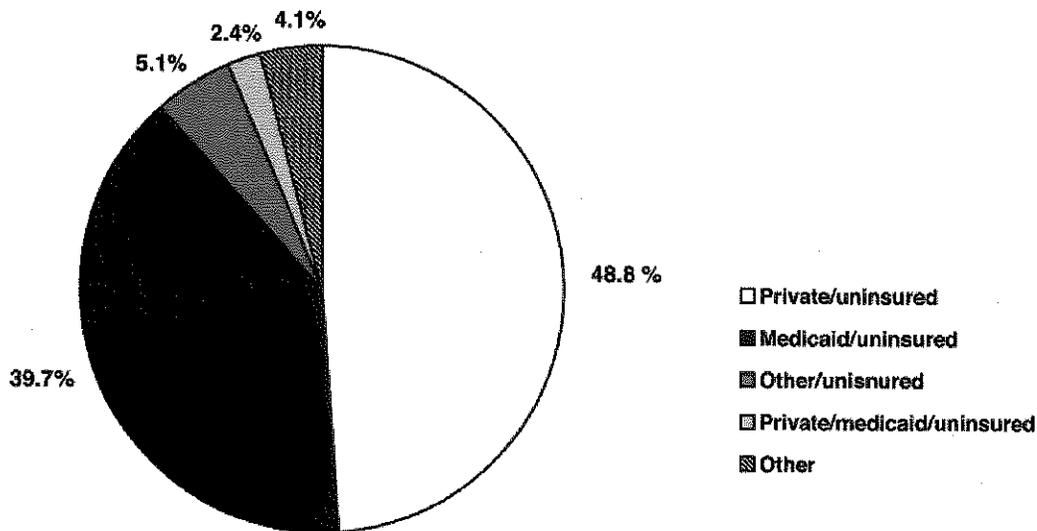


FIGURE 1 Percentages of insurance disruptions among intermittently insured children according to insurance type.

(40%). There were no differences in switches involving privately insured and uninsured or between Medicaid and uninsured in those with 1 disruption and those with ≥ 2 disruptions (subanalysis not shown).

Comparison by Insurance Disruption

Table 1 demonstrates that Hispanic children were more likely to be uninsured all year long ($P = .003$). In addition, families who were continuously uninsured had significantly older children than those in the other categories ($P < .001$). The mean income was slightly higher for those with ≥ 2 disruptions and slightly lower in those who were continuously insured ($P = .04$). The intermittently insured consistently made up the largest group

across all poverty levels ranging between 39% and 44% (although the difference between groups was not statistically significant). Otherwise, there were no statistically significant differences in sociodemographic characteristics among groups with different numbers of disruptions.

Table 2 demonstrates a graded relationship between insurance disruption (as defined by continuously uninsured, intermittently insured, continuously insured) and access, unmet medical need, and utilization. Those who were continuously uninsured reported significantly less access to care, greater unmet medical need, and less utilization than the continuously insured. Children with ≥ 2 disruptions looked more like the continuously uninsured than those with 1 disruption. The exceptions to

TABLE 1 Sociodemographics Factors According to Insurance Status

	CU (n = 250)	Intermittently Insured		CI (n = 165)	P
		≥ 2 Changes (n = 197)	1 Change (n = 98)		
Race, %					.003
Non-Hispanic white	36.0	44.3	39.2	51.2	
Black	4.9	5.2	9.3	3.7	
Hispanic	57.1	45.4	48.5	38.3	
Other	2.0	5.2	3.1	6.8	
% FPL					.84
<100%	33.6	29.2	35.8	35.1	
101%–133%	28.7	32.3	26.3	25.8	
134%–150%	15.4	13.9	14.7	17.9	
151%–185%	22.3	24.6	23.2	21.2	
% Male	52.8	52.8	59.2	53.3	.69
Child age, y					<.0001
1–4	25.2	45.7	54.1	39.4	
5–12	51.6	36.0	28.6	44.9	
13–19	23.2	18.3	17.4	15.8	
Child age, mean, y	9.2 (4.6)	7.1 (5.1)	6.6 (5.1)	7.3 (4.9)	<.0001
Family size, mean (SD)	4.0 (1.2)	4.0 (1.5)	3.9 (1.3)	3.8 (1.3)	.56
Family income, mean (SD), \$	20 855 (8511)	21 426 (8791)	19 372 (8839)	19 005 (9362)	.04

TABLE 2 Access to Care, Unmet Need, and Utilization According to Insurance Disruptions

	CU (n = 250)	Intermittently Insured		CI (n = 165), %	P
		≥2 Changes (n = 197), %	1 Change (n = 98), %		
Access					
Tried to have child seen for regular/routine care	61.6	81.1	85.7	84.8	<.0001
Tried to have child seen for sick/injured care	45.8	70.6	71.4	66.5	<.0001
Had medical home	73.2	89.3	92.9	93.9	<.0001
Had primary care physician	65.0	79.2	82.4	81.1	.0007
Unmet need					
Child needed, but couldn't get:					
Prescription medicine	23.7	20.9	15.5	12.1	.002
Regular/routine care visit	33.3	21.8	22.5	8.5	<.0001
Sick/injury visit	21.3	18.3	14.3	6.1	<.0001
Utilization					
Any regular/routine visit	53.2	73.1	80.6	81.8	<.0001
Any sick/injury visit	42.0	66.0	66.3	61.8	<.0001

this were in the reported “needed but couldn’t get regular/routine care” and the utilization of any sick/injury visits, where they looked similar to 1 another. In addition, the intermittently insured were most similar to the continuously uninsured in reporting unmet medical need. Conversely, the intermittently insured reported utilization patterns most similar to the continuously insured.

Multivariate Analyses

Multivariate analyses were used to evaluate the association between sociodemographics, insurance disruptions, and access to care, and unmet need and utilization (Table 3). Only statistically significant findings are shown. Hispanics reported less access to care (adjusted OR: 0.45 [95% confidence interval: 0.27–0.74]) and less utilization (adjusted OR: 0.60 [95% confidence interval: 0.42–0.87]) than other race categories independent of insurance status. Overall, these analyses confirm the gradient between greater insurance disruption and less access to care, greater unmet medical need and less utilization. All ORs, unadjusted and adjusted, reflect that for each outcome those with ≥2 changes resembled the continuously uninsured more closely than those with 1 change. The continuously insured were consistently less like the continuously uninsured than all other categories.

DISCUSSION

Previous studies have shown that lack of health insurance is associated with poor access to care, unmet medical need and poor utilization.^{6–11} Our study demonstrates that children who are consistently uninsured are most likely to experience these adverse outcomes. However, families with even minimal disruptions in coverage also report less access to a medical home, an inability to obtain needed prescription medications, and being less likely to seek regular/routine care for their children.

Moreover, a gradient is seen with decreasing access to care and utilization of preventive and sick care visits and increasing unmet medical need in children with increasing numbers of disruptions. This gradient suggests that the greater the number of insurance disruptions associated with a gap in coverage, the greater the likelihood of poor outcomes.

The act of going on and off of insurance has been defined as “churning.”^{8,9} Our findings are consistent with previous studies that suggest churning results in poor access, greater unmet need, lower rates of immunizations.^{6,7,9–13} However, our study was unique in that we examined insurance status on a month-to-month basis throughout an entire year. This approach allowed us to better characterize patterns of disruptions and offers a unique insight into the effect of the number of disruptions on several measures of care.

Specifically, our data confirm that a majority of children enrolling into SCHIP in Colorado in 2002 experienced a period of being uninsured. In addition, we found that almost uniformly this period of being uninsured had negative consequences for these children in terms of their access to care, unmet medical needs, and utilization patterns. The association with poor outcomes remained regardless of previous type of insurance status. Thus, it did not matter whether children had previously been enrolled in private insurance or Medicaid; experiencing a disruption in coverage was unfavorable. This finding speaks to the importance of policy changes that would minimize such disruptions in coverage regardless of previous insurance status.

By definition, our cohort represented low-income children because they were newly enrolled in SCHIP which at the time of the study in Colorado was limited to children at <185% of the FPL. Despite this fact, almost half of the children experiencing disruptions in coverage were from the private sector. This is likely because of a coinciding economic downturn before the study and

TABLE 3 Multivariate Analysis

	Access Had Medical Home		Unmet Need Needed but Couldn't Get Prescription Medicine		Utilization Any Regular/Routine Care	
	Unadjusted OR (95% Confidence Interval)	Adjusted OR (95% Confidence Interval)	Unadjusted OR (95% Confidence Interval)	Adjusted OR (95% Confidence Interval)	Unadjusted OR (95% Confidence Interval)	Adjusted OR (95% Confidence Interval)
CU	Reference	Reference	Reference	Reference	Reference	Reference
≥2	3.06 (1.79–5.21)	2.51 (1.43–4.41)	0.85 (0.54–1.34)	0.91 (0.57–1.46)	2.39 (1.60–3.57)	1.89 (1.24–2.87)
1	4.77 (2.10–10.81)	3.96 (1.71–9.13)	0.59 (0.32–1.10)	0.64 (0.33–1.22)	3.66 (2.09–6.40)	2.96 (1.65–5.33)
CI	5.64 (2.81–11.35)	4.47 (2.18–9.17)	0.44 (0.26–0.77)	0.51 (0.29–0.91)	3.96 (2.48–6.32)	3.16 (1.92–5.21)
Race						
Non-Hispanic white	Reference	Reference	Reference	NS	Reference	Reference
Black	0.63 (0.23–1.75)	0.72 (0.25–2.08)	1.17 (0.49–2.81)	—	1.23 (0.54–2.81)	1.54 (0.65–3.63)
Hispanic	0.42 (0.26–0.67)	0.45 (0.27–0.74)	1.31 (0.88–1.96)	—	0.56 (0.40–0.79)	0.60 (0.42–0.87)
Other	0.88 (0.25–3.10)	0.71 (0.20–2.60)	1.59 (0.64–3.93)	—	1.63 (0.60–4.42)	1.49 (0.53–4.16)
Male child gender	0.66 (0.43–1.01)	0.61 (0.38–0.96)	0.58 (0.40–0.85)	0.61 (0.10–0.89)	0.85 (0.62–1.17)	NS
Child age (per year)	0.91 (0.88–0.95)	0.93 (0.89–0.97)	1.05 (1.01–1.09)	1.04 (0.999–1.08)	0.93 (0.90–0.96)	0.93 (0.90–0.96)
Family size (per person)	0.87 (0.75–1.02)	NS	1.21 (1.05–1.39)	1.20 (1.05–1.38)	0.78 (0.79–1.00)	NS
Family income (BRFSS)	0.89 (0.78–0.999)	NS	1.07 (0.96–1.20)	NS	0.91 (0.83–0.995)	NS

NS indicates not significant; BRFSS, Behavior Risk Factor Surveillance System; —, reference group was not significant.

consistent with national data, which describes the erosion of employer-sponsored insurance and the resulting gap in coverage for children.^{19,20} Also consistent with national data,^{20,21} we found that Hispanics in Colorado were particularly at risk for being uninsured. Thus, any reform undertaken to covering children must specifically address the needs of the working poor and in particular Hispanics.

The other portion of our study population significantly impacted by disruptions in coverage, were those previously receiving Medicaid. Although disruption in coverage resulted in similarly negative outcomes regardless of previous insurance type, the reasons for the disruptions likely differed. In 2002, Colorado required that all Medicaid recipients report all changes affecting eligibility status including minor adjustments to income and changes in address. In addition, applicants were required to provide proof of address, verify income, and list all assets at the time of renewal. The complexity of reenrollment likely contributed to greater numbers of intermittently insured children²² whose health outcomes we found more similarly resembled the uninsured. Policy changes to streamline the enrollment and reenrollment processes would work to minimize disruptions in this population. Some strategies that have been suggested include presumptive eligibility at the time of application, passive renewal, the elimination of asset testing and income verification, and the acceptance of enrollment in other government-funded programs to establish citizenship and eligibility.

Our findings in conjunction with previous data support that decreasing the overall number of intermittently insured children could increase access and utilization of regular/routine care and decrease unmet need.²³ Ideally, these policy changes would take the form of legislation mandating continuous health coverage for all children, thereby eliminating these barriers to care.^{24,25}

Our study had several limitations. Given the design of the survey, which required responses on the basis of recollections from the previous 12 months, there is potential for recall bias on behalf of the parent. The outcomes we selected were based on self-report, and we could not validate these reports. Although the response rate was high for a low-income population, our findings still under represent those without telephones and populations that are difficult to reach because they frequently change their telephone or residence. Results were divided into several subgroups with limited sample sizes, which reduced our statistical power to identify group differences. Because the population surveyed consisted of new SCHIP enrollees, these results may not be generalizable outside of Colorado or to those not newly enrolled in SCHIP. Our study also has a number of important strengths. Measurement of insurance coverage on a month-to-month basis allowed for a more detailed measurement of disruptions and patterns of

insurance changes over time than previous studies of this topic. Although our sample size was not as large as those seen in national surveys, the distribution across insurance status was sufficient to allow for comparison.

The findings of this study underline the importance of continuous enrollment of all children into some form of health coverage. The fact that insurance disruptions have a progressive impact on access and utilization supports the notion that future analysis of the uninsured must include the intermittently insured. In addition, as efforts are made to address enrollment, particular attention should be paid to those who remain disenfranchised, specifically addressing their gaps in insurance coverage, access to care, unmet medical need and patterns of utilization.

Our data demonstrate the importance of policy efforts to create a program with seamless integration across different types of health coverage plans. Such policies would allow for individual portability and allow children to transition from 1 program to another without experiencing a disruption in coverage. This would help to minimize the difficulty of enrolling and retaining poor families on health plans. It would also work to minimize disenrollment because of administrative barriers and ultimately minimize the number of disruptions suffered by families. Federal and state governments have the opportunity to work jointly to create innovative plans to cover all kids. Plans such as those recently enacted in Illinois and Massachusetts are good examples of programs that have created an infrastructure whereby all children may be covered.^{26,27} These state plans offer proof that the universal coverage of kids is possible.

Colorado currently has an estimated 180 000 uninsured children, 120 000 of whom are thought to be eligible for either Medicaid or SCHIP.²⁸ Since the collection of the data for this study, the asset test used to determine eligibility has been eliminated, and the eligibility level for SCHIP has been increased from 185% to 200% of the FPL. However, several barriers remain intact, including restrictive guidelines to establish one's citizenship. Child health advocates in Colorado hope to work with policy makers toward continuous coverage for children by using changes that have proven successful in other states. Current initiatives include increasing the income eligibility levels for Medicaid across age groups to allow for uniform coverage within families, elimination of income verification, establishment of a 12-month continuous eligibility period for Medicaid recipients, and a gradual increase of the SCHIP income eligibility.²⁸

CONCLUSIONS

If health coverage for low-income children and families is not strengthened to include continuous coverage, we can anticipate that continued gaps will be associated with problems of access and utilization. The upcoming

federal renewal of SCHIP in 2007 provides the opportunity to extend funding to a larger number of children and to eliminate the barriers associated with enrollment and retention. Such policy efforts could significantly decrease the number of families that are undergoing disruptions in insurance coverage and thereby improve outcomes.

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