The State Children's Health Insurance Program: A Multicenter Trial of Outreach Through the Emergency Department

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Objectives. We evaluated emergency department (ED)–based outreach for the State Children's Health Insurance Program (SCHIP).

Methods. We conducted a multicenter trial among uninsured children (≤18 years) who presented to 5 EDs in 2001 and 2002. On-site staff enrolled consecutive subjects for a control period followed by an intervention period during which staff handed out SCHIP applications to the uninsured. The primary outcome was state-level confirmation of insured status at 90 days.

Results. We followed 223 subjects (108 control, 115 intervention) by both phone interview and state records. Compared to control subjects, those receiving a SCHIP application were more likely to have state health insurance at 90 days (42% vs 28%; $P<.05$; odds ratio [OR] = 3.8; 95% confidence interval [CI] = 1.7, 8.6). Although the intervention effect was prominent among 118 African Americans (50% insured after intervention vs 31% of controls, $P<.05$), lack of family enrollment in other public assistance programs was the primary predictor of intervention success (OR = 3.7; 95% CI = 1.6, 8.4).

Conclusions. Handing out insurance applications in the ED can be an effective SCHIP enrollment strategy, particularly among minority children without connections to the social welfare system. Adopted nationwide, this simple strategy could initiate insurance coverage for more than a quarter million additional children each year. (*Am J Public Health.* 2005;95:250–253. doi: 10.2105/AJPH.2003.037242)

In 1997, the US government initiated the multibillion dollar State Children's Health Insurance Program (SCHIP) in hopes of improving the health status of nearly 10 million uninsured children. The program not only expanded insurance coverage for poor children under Medicaid but also subsidized low-cost state insurance alternatives for working families living above the poverty line. However, despite significant efforts within each state, over 7 million children remain uninsured,[1] and many eligible families are still unaware of SCHIP enrollment opportunities.[2,3]

Although streamlined outreach and enrollment efforts have seen modest results, there is limited evidence for the efficacy of specific intervention strategies. We identified 1 of the simplest outreach strategies—handing out SCHIP applications at locations frequented by uninsured children—and sought to quantify its impact. With approximately 3 million visits by uninsured children to US emergency departments (EDs) each year,[4,5] we chose to study the effect of handing out SCHIP applications in an ED setting. We hypothesized that such an approach might represent a low-cost, high-impact enrollment strategy, particularly among those families who lack routine contact with the health and welfare system outside the ED.[6,7]

METHODS

Study Design

We conducted a multicenter case–control ("before–after") study of child health insurance outreach in 5 geographically diverse US EDs during 2001 and 2002. At each site, control cases were identified during a period immediately prior to the intervention period. Case outreach consisted of handing out SCHIP applications to the parent or guardian of uninsured children who presented to each ED.

We had initially intended to evaluate the effect of posting the toll-free SCHIP outreach number (1-877-KIDS-NOW) on wall posters and discharge paperwork at an additional 3 independent sites (randomized dual-arm intervention). However, full study enrollment at those sites failed to reach a critical mass for meaningful analysis (n = 16 intervention subjects total). Therefore, we present here the results of the SCHIP application intervention and corresponding controls only.

Setting and Population

Study sites were located at 4 inner-city hospitals in New York City, NY, Baton Rouge, La, Chicago, Ill, and Miami, Fla. We selected the sites from an existing research network of EDs,[8] based on the size of the uninsured pediatric population and the absence of significant SCHIP outreach efforts. A fifth site in the US Southwest was unable to obtain state-level follow-up (see "Protocol" below), reducing the effective site sample size to 4.

Patients were eligible for the study if they were aged 18 years or younger, if a parent or guardian gave informed consent (self-consent if age 18), and if the accompanying family member answered "no" to the screening question "Is your child covered by any kind of health insurance, such as private insurance, Medicaid, special state insurance, an HMO, or any other program?"

Insurance status was confirmed by each hospital's administrative database. When discrepancies arose between self-report and the administrative database, we enrolled only those subjects who verbally confirmed lack of insurance and for whom no definitive contrary information existed in the hospital database. Children were excluded from the study if they presented to the ED in acute distress and were unable to be stabilized, if they were admitted to the hospital or left the ED without treatment or against advice, or if they were unable to be contacted for a 90-day follow-up interview. Repeat visits were excluded.

Protocol

Site staff enrolled consecutive uninsured children in control and intervention periods. Each control period was followed by a matched intervention period during which site staff handed out state-specific SCHIP applications to the par-

ent or guardian of participating children. Control subjects received usual care without study interventions. Study periods ranged from 4 to 14 days; control and intervention periods were separated by about a week. Subjects' demographic information was collected at each site. Language interpretation and duplicate bilingual materials were provided per local protocols.

Approximately 90 days after each child's ED visit, site staff followed up with an interview by telephone with the child's parent or guardian. The parent/guardian was asked if the child was currently covered by "any kind of health insurance, such as private insurance, Medicaid, special low-cost or free insurance, a health maintenance organization, or any other program." Workers at each site also queried appropriate state databases or program representatives to confirm whether government-sponsored health coverage was active at the time of inquiry. They asked, "Does [this child] currently have government-sponsored low-cost or free health insurance?"

Outcome Measures

The primary outcome measure was state-level confirmation of Medicaid- or SCHIP-insured status at 90 days. For the outcome analysis, we included only those subjects who completed both home and state follow-up. This procedure ensured that subjects who received private or military insurance could be identified by interview and would not be counted as uninsured on state registry review.

Analysis

Univariate comparisons between groups were analyzed with χ^2 and Student t tests. A multivariate logistic regression model was created to further characterize the factors contributing to successful insurance enrollment. The dependent variable in the model was presence or absence of Medicaid or SCHIP insurance at 90-day state follow-up; independent variables significant at $P<.1$ in the univariate analysis were considered for inclusion in the multivariate model and evaluated for predictive value. The final model included age (by 5-year increments), gender, race (White or non-White), and the presence (yes/no) of any public assistance in the child's household ("any public assistance" defined as at least 1 of the following: public assistance or welfare payments from the state or local welfare office, Supplemental Security Income, Medicaid, food stamps, public housing assistance).

TABLE 1—Demographic Characteristics of Uninsured Children (N = 223) Presenting to 4[a] US Emergency Departments in 2001 and 2002

	Control, % (No.) (n = 108)	Intervention, % (No.) (n = 115)
Median age, y	9.1	6.8
Male gender	53 (57)	48 (55)
Race/ethnicity		
White	10 (11)	15 (17)
Non-White	90 (97)	85 (98)
African American	48 (52)	57 (66)
Hispanic	32 (35)	20 (23)
Other	9 (10)	8 (9)
Parent's educational level		
≤8th grade	8 (9)	10 (11)
Some high school	27 (29)	21 (24)
High school graduate	64 (69)	70 (80)
Annual household income, $		
<20 000	75 (80)	79 (90)
≥20 000	25 (26)	21 (24)
Household public assistance		
Any form of public aid listed below	32 (35)	34 (39)
Welfare payments	11 (12)	8 (9)
Supplemental security income	13 (14)	8 (9)
Medicaid	13 (14)	14 (16)
Food stamps	18 (19)	16 (18)
Public housing	6 (7)	2 (2)

Note. There were no significant differences in demographic characteristics between control and intervention cohorts (all $P>.05$).
[a]One of 5 original sites was unable to achieve state-level follow-up, reducing effective site sample to 4.

RESULTS

Of 6387 ED visits by children to the original 5 sites during the study period, 5564 (87%) were screened for the study (the others were not screened owing to staffing or administrative limitations at individual sites). Of those screened, 4849 (87%) reported or had initial evidence of ongoing insurance coverage and were excluded. Of the remaining 715 (13%) without insurance, 316 were excluded for the following reasons: definitive insurance coverage was subsequently identified (n=40); child was hospitalized or left before treatment or against advice (n=45); patient or guardian refused participation (n=3); study interview was missed because of staff or patient unavailability (n=145); child was a repeat visitor (n=2); or child was otherwise ineligible (n=81; e.g., no adult guardian, missing or ineligible age data). This produced a cohort of 399 subjects.

Of these 399 subjects, we obtained home interview follow-up for 264 (66%) and state follow-up for 340 (85%), producing a sample of 242 subjects (61%) completing both home and state follow-up (and effectively restricting the analysis to the 4 sites able to produce dual follow-up). Of these subjects, 19 (8%) reported receiving other insurance (private=13; military=1; other=5) during the follow-up period and were excluded from the final analysis, leaving a study sample of 223. This sample comprised 108 control subjects and 115 intervention subjects, with a racial/ethnic composition of 53% African American (Table 1).

Overall, there were no significant differences in demographic characteristics (all $P>.05$) among control and intervention cohorts. Stratified by location, the Miami and Baton Rouge sites saw and recruited more uninsured chil-

TABLE 2—Univariate Analysis of Successful Medicaid or SCHIP Enrollment 90 Days After Emergency Department Intervention[a]

	Control % Success (No.)	Intervention % Success (No.)	*P*
All	28 (30)	42 (48)	.029
Median age, y	7.4	3.9	.013
Gender			
Male	32 (18)	42 (23)	.261
Female	24 (12)	43 (25)	.031
Race/ethnicity			
White	27 (3)	24 (4)	.823
Non-White[b]	28 (27)	45 (44)	.013
African American	31 (16)	50 (33)	.035
Hispanic	29 (10)	35 (8)	.617
Parent's educational level			
High school graduate	30 (21)	40 (32)	.224
Non–high school graduate	24 (9)	46 (16)	.048
Annual household income, $			
<20 000	30 (24)	44 (40)	.052
≥20 000	19 (5)	29 (7)	.441
Household public assistance			
Any public aid	54 (19)	49 (19)	.632
No public aid	15 (11)	38 (29)	.001

Note. SCHIP = State Children's Health Insurance Program.
[a]Excludes those who obtained non–Medicaid/SCHIP insurance during follow-up period (n = 19).
[b]Includes "Other" ethnic/racial backgrounds (n = 19).

TABLE 3—Multivariate Predictive Model for Successful Medicaid or SCHIP Enrollment 90 Days After Emergency Department Intervention

	OR (95% CI)	*P*
Intervention	3.8 (1.7, 8.6)	.001
Age (per 5-year increment)	0.6 (0.4, 0.8)	<.001
Male gender	1.4 (0.8, 2.7)	.25
Race/ethnicity		
White	0.8 (0.3, 2.1)	.66
Non-White	1.0	Reference
Any public assistance	8.6 (3.2, 23.0)	<.0001
Intervention × any public assistance[a]	0.2 (0.1, 0.7)	.012

Note. SCHIP = State Children's Health Insurance Program; OR = odds ratio; CI = confidence interval. Independent variable in logistic regression model = yes/no successful SCHIP/Medicaid enrollment. Area under receiver operating characteristic curve = .76; Hosmer–Lemeshow *P* = .39; parent education and household income were noncontributory and thus excluded.
[a]Significant interaction effect; OR[intervention] among households without ongoing public assistance = 3.7 (95% CI = 1.6, 8.4); *P* = .002; with public assistance = 0.6 (95% CI = 0.2, 1.7); *P* = .33.

dren (n=99 and 87, respectively) than the Chicago and New York sites (n=14 and 23, respectively).

Compared to the study cohort, subjects excluded from the analysis because of incomplete follow-up or intervening insurance (n=176) had a lower proportion of African American subjects (37% vs 53%; *P*<.05), a higher proportion of Hispanic subjects (44% vs 26%; *P*<.05), and a higher proportion of public housing dwellers (14% vs 4%; *P*<.05). However, there were no differences in the overall proportion of non-Whites and public aid recipients in the excluded group, and we observed no other significant differences.

Compared to controls in the final study group, those receiving a SCHIP application were more likely to have Medicaid or SCHIP insurance at 90-day follow-up (42% vs 28%; *P*<.05) (Table 2). About two-thirds of all successful SCHIP applicants were enrolled in Medicaid. The intervention effect was prominent among 195 non-Whites (45% insured after intervention vs 28% of controls; *P*<.05), but was not seen among the small group of 28 Whites (24% vs 27%; *P*=.82). Among African Americans (n=118), successful insurance enrollment reflected the overall trend (50% insured after intervention vs 31% of controls; *P*<.05). Statistically significant intervention effects were not seen among the relatively small group (n=58) of Hispanic subjects (35% insured after intervention vs 29% of controls; *P*=.62).

In a multivariate model (adjusting for age, gender, race [White or non-White], and current public assistance), the intervention nearly quadrupled the odds of Medicaid or SCHIP enrollment among the uninsured (odds ratio [OR]=3.8; 95% confidence interval [CI]=1.7, 8.6) (Table 3). Education and income did not contribute to the multivariate model, and these variables were excluded. Younger children were more likely to be successfully enrolled across both intervention and control arms. Race was not a significant predictor of success, but lack of public assistance in the child's household significantly raised the odds of successful enrollment among intervention subjects (*P*<.05 for interaction of intervention × any public assistance in the overall predictive model; for intervention among households without ongoing public assistance, OR=3.7; 95% CI=1.6, 8.4; with public assistance, OR=0.6; 95% CI=0.2, 1.7).

DISCUSSION

Approximately 3 million annual ED visits are made by uninsured children.[4,5] Our data are consistent with national estimates indicating that up to 30% of these, or nearly 1 million, will convert to insured status independent of additional outreach efforts[9] (28% of our control subjects converted to Medicaid or SCHIP insurance at follow-up despite not receiving the intervention). In our sample of inner-city sites, we demonstrated how simply handing out applications in the ED can nearly quadruple the baseline odds of Medicaid or SCHIP enrollment among uninsured children.

The intervention effect was particularly apparent within the study's large African American population, a useful finding for officials working to eliminate disparities in minority health. Although handing out applications in-

creased insurance enrollment among uninsured African American children by 19 percentage points (from 31% to 50%; $P<.05$), multivariate analysis suggests that lack of ongoing public assistance was the primary predictor of success among intervention subjects. We hypothesize that subjects without ongoing connections with the health and welfare system were especially receptive to insurance outreach in the ED.

We based our enrollment criteria on self-report, a particularly reliable method among those reporting lack of insurance in the ED.[10] However, we heard from some sites that a number of disadvantaged families may report insurance coverage when none actually exists (for fear of receiving a hospital bill, being denied care for inability to pay, or being reported to a state welfare agency). Therefore, we included in our final analysis only those participants whose self-reported follow-up data could be verified by state records. Although such a requirement reduced our effective sample size, requiring both state and home follow-up offered compelling advantages: definitive confirmation of insurance status, exclusion of those receiving private or other insurance during the follow-up period, and inclusion only of those who could be reliably contacted by follow-up workers (often essential for successful social outreach).

Rerunning the multivariate model to include any subject with state-level follow-up (n=340 vs n=223 for both state and home follow-up) also produced a significant intervention effect (OR=2.6; 95% CI=1.3, 5.4); however, the absence of ongoing public assistance appeared to lose its level of significance as a predictor of outreach success (OR [intervention × any public assistance] did not remain statistically less than 1.0). In broadening the inclusion criteria (and depending only on the Medicaid/SCHIP state registry to confirm insured status) we cannot identify those children who received private or other insurance during the follow-up period, a group that we excluded from the original analysis. Moreover, we suspect that the interaction effect with public assistance was no longer significant in the expanded model because it included subjects who could not be reliably contacted at home. We hypothesize that those subjects unreachable at home were also likely unavailable to state enrollment officials who may have tried to confirm or facilitate the enrollment process; by contrast, those subjects who had no existing connections to the social welfare system but who could be reached at home gained particular benefit from ED-based social outreach.[11,12]

Caution must be used in generalizing results of a smaller multicenter study than we had originally anticipated, particularly as the bulk of uninsured children were recruited at 2 study sites. However, some portion of the intervention effect seen here should transfer to similar EDs across the country. Assuming a conservative intervention effect (10% increase in insurance enrollment), the low-cost, potentially high-impact method described here could lead to coverage for approximately 300 000 additional children each year. We recommend that EDs across the nation hand out state-specific SCHIP/Medicaid applications to all uninsured children presenting for care.

Handing out insurance applications in the ED can be an effective SCHIP enrollment strategy, particularly among minority children without connections to the social welfare system. Adopted nationwide, this simple strategy could initiate insurance coverage for more than a quarter million additional children each year. ■

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Contributors

J.A. Gordon conceived the project, obtained funding, supervised study operations and analysis, and led the writing of the article. J.A. Emond completed the data analysis, helped with project administration, and contributed to critical writing and revisions. C.A. Camargo, Jr, helped with the study design and funding application, supervised study operations and analysis, and contributed to critical writing and revisions.

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Human Participant Protection

This study was approved by the institutional review board at each participating hospital.

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