# CHILDREN'S OUTCOMES

## Under-Insured Children at High Risk in Colorado

James Todd MD, Carl Armon MSPH, and Stephen Berman MD

There has been a gradual decrease since 1995 of children in Colorado covered by private health insurance. We have recently documented that inadequate primary care and lack of age-appropriate immunizations are associated with an increasing proportion of Medicaid enrolled children not having an assigned primary care physician. There has also been a gradual erosion of willingness of primary care physicians in private practice to participate in Medicaid related to payments that fail to cover visit overhead costs and administrative inefficiencies.

Last week at a Joint Budget Committee meeting, Jay Markson and Bruce MacHaffie eloquently emphasized private pediatrician's desire to care for all children, but the unreasonable hardship that Medicaid under-reimbursement places on them. Similarly, it was emphasized that the Children's Hospital is the largest provider of Medicaid care for hospitalized children in Colorado but reimbursement does not begin to cover its costs.

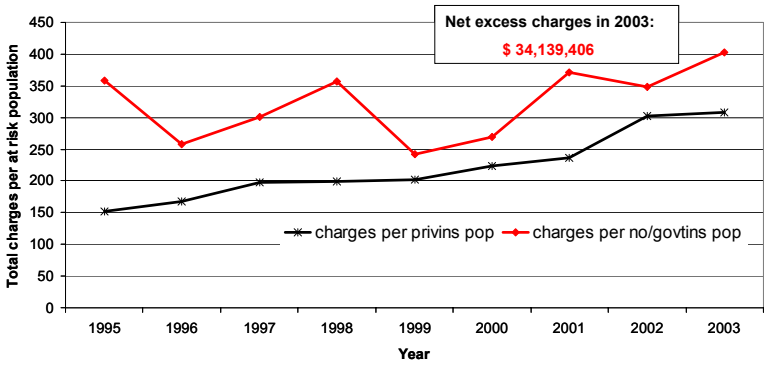
Steve Berman and Jim Todd made a similar presentation at the Denver Chamber of Commerce several weeks ago because there is an excellent business case as well as moral case for changing such regressive policies. The failure of State child health policies to encourage a medical home may actually increase health care expenditures because of higher preventable hospitalization rates.

We have completed a population-based analysis of hospitalization data for children from the Colorado Hospital Association database from 1995-2003 using health insurance coverage estimates from the US Census Bureau to address this issue. The results show that children with public or no insurance have much higher hospital charges and significantly higher hospitalization rates overall as well as higher admission rates for children with chronic illness, asthma, diabetes, appendectomy, and vaccine-preventable disease. Figure 1 shows the per capita hospital charges for children with public or no insurance as compared to private insurance. In aggregate, there was an excess of charges of over $34 million in 2003. Since they often don't have a medical home, these children were more often admitted from the emergency Department (ED). In addition children with public or no insurance had higher fatality rates, a higher severity of illness, and a higher proportion with complications such as a ruptured appendix.

These findings document substantially greater hospital charges and morbidity for children with public or no insurance and suggest the opportunity for improved health outcomes and decreased costs for underinsured children if private insurance standards of medical home and hospital care could be achieved that would offer more consistent prevention and acute care within a continuity setting.

In the current situation everyone loses: the Medicaid/SCHIP patients and families who experience excessive mortality and morbidity, community-based physicians and hospitals, who aren't compensated enough to cover costs, the business community who pay more to providers to cover at least part of the Medicaid shortfall and the Colorado tax payer who pay for these public health plans that are not getting the best value (outcomes) for the dollar. The implication is that the $34 million could be better spent (and could partially pay for itself) by providing improved primary care that reduces the need for emergency visits and hospitalization.

**Total hospitalization charges for Colorado children aged > 28 days to < 18 years per insured population by insurance type and year**




What can be done? We believe that there are sound humanitarian as well as fiscal grounds for assuring access to a medical home for every child in Colorado. We will continue to provide the local data and analyses that clarify the problem and its potential solutions, but we all must be willing, like Jay and Bruce, to advocate to put children first both in the public and private sectors.

Please call Carolyn Brock at 303/861-6412 if you would like to receive back as well as future issues of the State of Health of Colorado's Children white papers, and please take every opportunity to use Colorado's data to influence policy that improves the health of all Colorado's children.

**HAPPY HOLIDAYS!**

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## Recent Outcomes Abstracts from TCH/UCHSC

**Olds, D. L., J. Robinson, et al. (2002). "Home visiting by paraprofessionals and by nurses: a randomized, controlled trial.[comment]." Pediatrics. 110(3): 486-96.** OBJECTIVE: To examine the effectiveness of home visiting by paraprofessionals and by nurses as separate means of improving maternal and child health when both types of visitors are trained in a program model that has demonstrated effectiveness when delivered by nurses. RESULTS: Paraprofessional-visited mother-child pairs in which the mother had low psychological resources interacted with one another more responsively than their control-group counterparts (99.45 vs 97.54 standard score points). There were no other statistically significant paraprofessional effects. In contrast to their control-group counterparts, nurse-visited smokers had greater reductions in cotinine levels from intake to the end of pregnancy (259.0 vs 12.32 ng/mL); by the study child's second birthday, women visited by nurses had fewer subsequent pregnancies (29% vs 41%) and births (12% vs 19%); they delayed subsequent pregnancies for longer intervals; and during the second year after the birth of their first child, they worked more than women in the control group (6.83 vs 5.65 months). Nurse-visited mother-child pairs interacted with one another more responsively than those in the control group (100.31 vs 98.99 standard score points). At 6 months of age, nurse-visited infants, in contrast to their control-group counterparts, were less likely to exhibit emotional vulnerability in response to fear stimuli (16% vs 25%) and nurse-visited infants born to women with low psychological resources were less likely to exhibit low emotional vitality in response to joy and anger stimuli (24% vs 40% and 13% vs 33%). At 21 months, nurse-visited children born to women with low psychological resources were less likely to exhibit language delays (7% vs 18%); and at 24 months, they exhibited superior mental development (90.18 vs 86.20 Mental Development Index scores) than their control-group counterparts. There were no statistically significant program effects for the nurses on women's use of ancillary prenatal services, educational achievement, use of welfare, or their children's temperament or behavior problems. For most outcomes on which either visitor produced significant effects, the paraprofessionals typically had effects that were about half the size of those produced by nurses. CONCLUSIONS: When trained in a model program of prenatal and infancy home visiting, paraprofessionals produced small effects that rarely achieved statistical or clinical significance; the absence of statistical significance for some outcomes is probably attributable to limited statistical power to detect small effects. Nurses produced significant effects on a wide range of maternal and child outcomes.

**Rewers, A., H. P. Chase, et al. (2002). "Predictors of acute complications in children with type 1 diabetes." Jama. 287(19): 2511-8.** CONTEXT: Diabetic ketoacidosis and severe hypoglycemia are acute complications of type 1 diabetes that are related, respectively, to insufficient or excessive insulin treatment. However, little is known about additional modifiable risk factors. OBJECTIVE: To examine the incidence of ketoacidosis and severe hypoglycemia in children with diabetes and to determine the factors that predict these complications. RESULTS: The incidence of ketoacidosis was 8 per 100 person-years and increased with age in girls (4 per 100 person-years in < 7; 8 in 7-12; and 12 in > or =13 years; P<.001 for trend). In multivariate analyses, sex-adjusted and stratified by age (<13 vs > or =13 years), the risk of ketoacidosis in younger children increased with higher hemoglobin A(1c) (HbA(1c)) (relative risk [RR], 1.68 per 1% increase; 95% confidence interval [CI], 1.45-1.94) and higher reported insulin dose (RR, 1.40 per 0.2 U/kg per day; 95% CI, 1.20-1.64). In older children, the risk of ketoacidosis increased with higher HbA(1c) (RR, 1.43; 95% CI, 1.30-1.58), higher reported insulin dose (RR, 1.13; 95% CI, 1.02-1.25), underinsurance (RR, 2.18; 95% CI, 1.65-2.95), and presence of psychiatric disorders (for boys, RR, 1.59; 95% CI, 0.96-2.65; for girls, RR, 3.22; 95% CI, 2.25-4.61). The incidence of severe hypoglycemia was 19 per 100 person-years (P<.001 for trend) and decreased with age in girls (24 per 100 patient-years in < 7, 19 in 7-12, and 14 in > or =13 years). In younger children, the risk of severe hypoglycemia increased with diabetes duration (RR, 1.39 per 5 years; 95% CI, 1.16-1.69) and underinsurance (RR, 1.33; 95% CI, 1.08-1.65). In older children, the risk of severe hypoglycemia increased with duration (RR, 1.34; 95% CI, 1.25-1.51), underinsurance (RR, 1.42; 95% CI, 1.11-1.81), lower HbA(1c) (RR, 1.22; 95% CI, 1.12-1.32), and presence of psychiatric disorders (RR, 1.56; 95% CI, 1.23-1.98). Eighty percent of episodes occurred among the 20% of children who had recurrent events. CONCLUSIONS: Some children with diabetes remain at high risk for ketoacidosis and severe hypoglycemia. Age- and sex-specific incidence patterns suggest that ketoacidosis is a challenge in adolescent girls while severe hypoglycemia continues to affect disproportionally the youngest patients and boys of all ages. The pattern of modifiable risk factors indicates that underinsured children and those with psychiatric disorders or at the extremes of the HbA(1c) distribution should be targeted for specific interventions.

**Robinson, C. C., M. Willis, et al. (2002). "Impact of rapid polymerase chain reaction results on management of pediatric patients with enteroviral meningitis." Pediatric Infectious Disease Journal. 21(4): 283-6.** BACKGROUND: Enterovirus (EV) infections can be rapidly detected by PCR. However, several studies suggest that results must be available early in the management of the patient to impact significantly on patient care. We evaluated this hypothesis directly during an outbreak of EV aseptic meningitisRESULTS: Cerebrospinal fluid specimens were submitted for EV PCR from 113 patients with suspected EV meningitis, and 50 of 113 (44%) were positive. Of these 50 EV-PCR-positive patients, 17 of 50 (34%) had EV PCR results available in < or = 24 h and 33 of 50 (66%) had results available in >24 h. Patients with EV-positive results reported < or = 24 h after specimen collection had 20 h less of antibiotic use (P = 0.006) and $2,798 less in hospital charges (P = 0.001) than patients with positive results available in >24 h. Hospitalized patients who received positive results rapidly did not have significantly less antibiotic therapy or shorter length of stay, but hospital charges were reduced by $2,331 (P = 0.009). CONCLUSION: Rapid reporting of PCR results can have a significant impact on several outcome measures for patients with EV meningitis.


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