TLC Asthma: An Integrated Child Health Information System for Patient-Centered Monitoring, Case Management, and Point-of-Care Decision Support

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Research Objective: A great deal of successful work has been done in the area of EMR development, implementation, and evaluation. Less work has been done in the area of automated systems for patients. Efforts to link data at multiple levels – the patient, the case manager, and the clinician have been rudimentary to-date. Our primary objectives for this project are to design and evaluate an integrated health information system to support patient self-monitoring, nurse case management, and primary care information review to improve the quality of care and health outcomes for children with asthma.

Study Design: The study has two phases: 1) system development (completed); and 2) evaluation (ongoing). During the development phase we have designed and implemented a model information system that integrates child health information across multiple domains to support the monitoring and care of children with persistent asthma. The system includes three primary components: 1) a patient-centered telephone-linked communication system; 2) a web-based alert reporting and nurse case-management system; and 3) EMR-based provider communication to support clinical decision making at the point-of-care. The TLC-Asthma system is being evaluated in a ongoing randomized clinical trial.

Population Studied: The system is being evaluated in children 5-16 years old and their parents who are members of a large, multi-center, multi-specialty, group practice in the Boston area.

Principal Findings: In this presentation, we will describe the TLC-Asthma system, and highlight the unique features and considerations of a computer-based telecommunications system for children including; 1) the use of developmentally appropriate script customization; 2) the roles of child and parent in monitoring and learning about asthma care; and 3) some of the technical considerations for usability of systems designed for use by children. Approximately 80 children and their parents will be participating in the evaluation of TLC-Asthma by June 2004. We will present preliminary data regarding user-interactions with the system (adherence to recommended call schedules, completion of calls, monitoring and educational content completed) and review the type and frequency of alerts generated as well as the related nurse-case manager responses.

Conclusions: The TLC-Asthma system offers a model for an information system with a new level of connectivity for child health information that supports customized monitoring; IT-enabled nurse case-managers, and the delivery of longitudinal data to clinicians to support the care of children with persistent asthma.

Implications for Policy, Delivery or Practice: There is a tremendous need to provide effective, low-cost education and monitoring systems capable of supporting the care of the large numbers of children with persistent asthma. If shown to be useable, affordable, and effective, systems like TLC-Asthma will be well-suited, perhaps essential, technologies for the care of children and adults with chronic conditions such as asthma.

Primary Funding Source: AHRQ

The ABCs of Children's Health Care: How the Medicaid Expansions Affected Access, Burdens, and Coverage Between 1987 and 1996

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Research Objective: The Medicaid poverty-related expansions for children were among the major health policy initiatives of the late 1980s. This paper examines the impact of these expansions on children’s access to care, family expenditure burdens (including insurance premiums and out-of-pocket expenditures on care), and health insurance coverage. We compare the experience of children targeted by the Medicaid expansions to that of children who were subsequently targeted by the State Children's Health Insurance Program (SCHIP).

Study Design: We use data from the 1987 National Medical Expenditure Survey and the 1996 Medical Expenditure Panel Survey. We begin by simulating eligibility for both years according to rules in place as of 1987, 1996, and 2000. The treatment population consists of children targeted by the eligibility expansions between 1987 and 1996. Our primary control population consists of children subsequently targeted by the expansions (primarily SCHIP) between 1996 and 2000. The experience of this control population in the decade prior to SCHIP implementation is of policy interest in its own right. Moreover, the SCHIP and Medicaid expansion populations overlap to a considerable degree due to variations in coverage generosity across states, making the children targeted by SCHIP a valuable control population for assessing the impact of the Medicaid expansions.


Principal Findings: The Medicaid expansions significantly increased access to care, reduced financial burdens, and increased coverage relative to children who were subsequently targeted by SCHIP. This is partly because of improvements experienced among children targeted by the Medicaid expansions and partly because of deteriorating coverage among children subsequently targeted by SCHIP.

Conclusions: Our research shows that expanding children’s eligibility for free or highly-subsidized public coverage can have important beneficial impacts on the ABCs of children’s health care: access, burdens, and coverage. We nevertheless observe large gaps in the ABCs of children’s health care between higher-income children and those targeted by the Medicaid expansions.

Implications for Policy, Delivery or Practice: Fiscal pressure have lead some states to begin cutting back on outreach efforts and reducing SCHIP eligibility and benefits. Our results provide important evidence regarding the beneficial...
impacts of expanding public coverage for children – and the potential negative impacts that can arise from reversing that process.

**Primary Funding Source:** AHRQ

• **Early Predictors of Smoking Among High School Students and Dropouts**

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**Research Objective:** To examine prospectively whether the association between smoking and dropping out of high school can be explained by differences in future dropouts and stayers that emerge as early as grade 7. Hypotheses: (1) at grade 7, future dropouts have greater exposure than stayers to factors that increase the risk of cigarette initiation; (2) students who eventually drop out are more vulnerable than stayers to certain risk factors for smoking, particularly low parental education, grades and academic aspirations and peers who smoke; (3) parental social support and disapproval of smoking are less protective for dropouts.

**Study Design:** Longitudinal cohort study of self-reported cigarette use. Of interest is whether, among students who have never smoked at grade 7, future dropouts are either more likely to be exposed to risk factors that predict smoking and whether they are more vulnerable to specific risk factors that predict smoking.

**Population Studied:** 4,226 California and Oregon adolescents surveyed at grade 7 and 5 years later, in 1985 and 1990, respectively. By restricting the analysis to those students who have not tried cigarettes by grade 7 (45.8%), we are able to compare risks and outcomes for future dropouts and stayers whose risk factor exposure and vulnerability are not affected by prior smoking.

**Principal Findings:** At grade 7, future dropouts were more likely to have less educated parents (p <.05), a parent who smokes (p <.05), low academic intentions (p <.01), live in a disrupted family (p <.001), engaged in deviant behavior (p <.05), and do poorly in school (p <.001). However, they did not differ in the proportion with parents who disapproved of smoking, received social support from either parents or peers, had contact with peers who smoked, had low cigarette resistance self-efficacy, or intended to smoke in the future. Although many of these variables predicted smoking at age 18, controlling for them did not explain future dropouts’ higher subsequent smoking frequency compared to those who stayed in school. What eliminated that difference was an interaction between future dropout status and parental disapproval of smoking at grade 7.

**Conclusions:** This study indicates that at grade 7 future high school dropouts are not yet exposed to many of the risk factors for smoking at significantly higher rates that their peers who stay in school. However, future dropouts appeared to rebel against parental smoking disapproval, whereas those who stayed in school did not, suggesting that the normally protective factor of parental disapproval was associated with rebellious smoking behavior for some adolescents.

**Implications for Policy, Delivery or Practice:** It may be possible to intervene in the middle school years and reduce their risk of smoking through targeted efforts. Moreover, our findings support further consideration of providing multi-component programs that target multiple risk factors in adolescents to prevent tobacco use and other high-risk behaviors, such as dropping out of school.

**Primary Funding Source:** RWJF

• **Are Children in Kinship Care Getting the Mental Health Services They Need?**

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**Research Objective:** To compare the need for and use of mental health services in a nationally representative sample of children living in informal kinship care (IKC), formal kinship care (FKC) and foster care (FC).

**Study Design:** Data are from the National Survey of America’s Families (NSAF). Mental health need was defined as school suspension/expulsion or having a negative behavior score (NBS). The NBS was created by the NSAF from six items on the Child Behavior Checklist addressing feelings of worthlessness and anxiety, sleep and school problems and cheating. Mental health services were defined as one or more visits to a mental health provider during the previous 12 months. Bivariate and multivariate analyses were performed.

**Population Studied:** The study population consisted of three groups of children aged 6-17 years that were created by the NSAF: Informal kinship care, living with relatives without social services involvement (n=1206), formal kinship care, living with relatives and arranged by a social services agency (n=394), traditional foster care (n=149).

**Principal Findings:** Children in IKC and FKC were more likely than children in FC to be African American (IKC 43.8%, FKC 60.6%, FC 21.4%, p=0.001) and to live in poverty (IKC 63.9%, FKC 76.8%, FC 40.4%, p<0.01). Mental health need was lowest in the IKC group (IKC 20.6%, FKC 31.7%, FC 38.3%, p=0.01). The kinship groups used fewer mental health services. (IKC 11.4%, FKC 22.5%, FC 43.0%, p<0.001). This pattern of service use was also seen among those children identified as having mental health need (IKC 27.7%, FKC 47.8%, FC 70.7%, p=0.01). In multivariate analyses controlling for sociodemographic factors and mental health need, children in both types of kinship care were more likely to lack mental health services, compared to the FC group (IKC: OR 4.8, 95% CI: 2.3-10.0; FKC: OR 2.4, 95% CI: 1.1-5.5).

**Conclusions:** Children in formal and informal kinship care are at significant risk of not receiving needed mental health services. Future studies need to focus on the barriers to mental health care utilization that are unique in this population.

**Implications for Policy, Delivery or Practice:** Primary care providers need to identify and address the mental health need for these children. Policymakers need to ensure the availability of services for these high risk children.

**Primary Funding Source:** NCI
• Service Utilization and Trust in Health Care Providers
Huey Chen, Ph.D.

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Research Objective: The objective of this study was to examine the relationships between services used by Medicaid children enrolled in health plans with different financing arrangement and their caregivers’ trust in the children’s health care providers.

Study Design: The study used three data sources: (1) Self-report data from caregivers of Medicaid children who received Supplemental Security Income (SSI) through a population-based mail survey conducted in 2001; (2) Medicaid claims; and (3) the Integrated Data System (IDS) administrative data from the Department of Children and Families (DCF) to capture all possible services use data for the study population. A regression model was used to examine caregivers’ trust in their children’s health care providers in relation to service use among Medicaid children enrolled in different health plans.

Population Studied: A total of 946 Medicaid SSI children and their caregivers’ response were included in the study. About a third (31.4%) of the children were girls. Children’s ages ranged from 5 to 21 years old and they averaged 13.5 years old (SD = 3.8). In terms of race/ethnicity, 29.7% of the children were Caucasian, 34.8% African-American, and 35.5% were Hispanic or from other minority groups. Among these children, 43.7% were enrolled in fee-for-service plans, 14.8% were enrolled in the prepaid mental health plan with physical health services in a fee-for-service plan, 14.8% were enrolled in the prepaid mental health plan with physical health services in a fee-for-service plan, 13.0% were enrolled in an HMO for both physical and mental health services, and 28.5% were enrolled in HMO plans for physical care with mental health services provided through a fee for service plan.

Principal Findings: Caregivers’ levels of trust in their children’s health care providers were significantly related to their children’s use of health services. Caregivers of children who used services during the year preceding the mail survey reported significantly higher levels of trust in their children’s health care providers compared to enrollees who did not use service. Health plan is not a significant predictor in predicting health care providers compared to enrollees who did not use service during the year preceding the mail survey.

Conclusions: Caregivers with younger children were significantly more likely to trust their children’s health care providers compared to caregivers with older children.

Implications for Policy, Delivery or Practice: Trust remains a primary concern of many scholars, researchers, and health care providers within current health system. Children’s use of services is significantly related to their caregivers’ trust in health care providers of their children. It is important for clinician to build a trust relationship with caregivers that would foster the professional relationship to assure treatment continuation for disadvantaged children.

Primary Funding Source: Other, Support for this study was provided in part through a grant through a contract with the Florida Agency for Healthcare Administration (Contract #M0408).

• Quality Transformation: Assessing the Impact of Computerized Order Sets on Asthma Quality Indicators for Inpatients

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Research Objective: Condition-specific order sets within computerized physician order entry--CPOE--systems are designed to decrease unnecessary practice variation and to promote best practices. These sets build evidence-based treatment recommendations into the normal flow of patient care, making the use of evidence an integral part of the care process. Most researchers and policy-makers, including the influential LeapFrog Group, agree that this integration will improve quality of care.

Columbus Children’s Hospital, Inc.--CCHI--has recently implemented a CPOE system with disease-specific order sets to reach this goal. Our research objective for this project was to determine the impact of CCHI’s asthma order set on indicators of asthma care quality.

Study Design: Three indicators of asthma care quality were measured: use of systemic corticosteroids, use of metered-dose inhalers, and use of pulse oximetry. Rates for each indicator were calculated for three patient groups: those admitted prior to order set roll-out--pre-set; those admitted after roll-out without order set used--no set; and those admitted after roll-out with order set used--set. Utilization rates for the three groups were compared using raw frequencies and logistic regression. Length of stay, total charges, and pharmacy charges were calculated to measure the impact of order set use on cost efficiency. Group differences for these variables were tested using ANOVA. All analyses for this study were conducted using data from the CCHI Decision Support System and the Eclypsys CPOE system.

Population Studied: The study population included patients with a primary ICD-9 diagnosis code of 493.xx admitted to CCHI between November 1, 2001 and November 30, 2003. Patients admitted directly to the pediatric intensive care unit were excluded. The population analyzed included 261 pre-set patients, 63 no set cases, and 466 set patients.

Principal Findings: There was a significant positive relationship between asthma order set use and selected quality indicators. Multivariate logistic regression showed that order set patients are significantly more likely to have systemic corticosteroids used during the admission—odds ratio of 6.08, significantly more likely to have an inhaler used—odds ratio of 1.41, and significantly more likely to have pulse oximetry—odds ratio of 2.62. No set patients did not differ significantly from pre-set patients on any indicator. The increase in appropriate treatment use did not lead to any increase in cost. No significant differences were found in total...
Child Gets Sick. Four volunteer sites were solicited from Head Start agencies in four communities-three in California and one in Missouri. In two community groups, the primary language was Spanish and in the other two, English.

Principal Findings: Exposure to the self-care book or to the book with additional training affected the way many parents accessed their health information. In a six-month follow-up, parents who received the book reported a 48% reduction in ED visits and a 37.5% reduction in clinic visits, relying more on information found in the book when their children became sick. Most Head Start parents and healthcare coordinators had a positive view of the book and believed it could be useful as an intervention tool.

Conclusions: These results suggest that Head Start parents could benefit psychologically from training and access to a self-help book like What To Do When Your Child Gets Sick. Use of an easy-to-read, easy-to-understand self-care book on children's healthcare had a positive impact on parents' confidence and knowledge of basic medical interventions. And it seems clear that fewer unnecessary ED visits would have a positive fiscal impact on all stakeholders involved in emergency medical care, from patients to insurance companies.

Implications for Policy, Delivery or Practice: Better utilization of medical resources, especially the ED, can help all parties involved. Use of this self-help book and the corresponding training program could have other advantages apart from those mentioned above. More knowledgeable parents keep better track of children's immunizations, decreasing unnecessary vaccinations and ensuring that their children are protected from debilitating illnesses. Better-informed parents provide improved well-child care for young toddlers and take better care of their future children, from conception through adolescence. Such parents might save time and money with their newfound ability to provide minor healthcare to family members, critically thinking through various healthcare options when a child is sick or taking advantage of preventive measures and less costly treatments when the time comes.

Primary Funding Source: Other, Johnson & Johnson

Look Who's Talking: Shared Decision-Making with Children

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Research Objective: Children's participation in medical visits produces improved outcomes and teaches skills for shared decision-making, SDM. Child talk during the medical visit increases with age, creating opportunities to involve children in SDM. No study has examined how the physician, child and parent share talk in a medical visit or how the child's age influences this sharing. We investigate the sharing of SDM-relevant talk--relationship building, information giving and information gathering--among physician, child and parent for children of different ages.

Study Design: Data from a cross-sectional observational study of children's primary care visits included videotapes of the visits, demographics, practice characteristics and healthcare utilization data. Using the Roter Interaction Analysis System, all utterances in each videotape were coded into mutually exclusive categories, which were aggregated to reflect SDM-relevant talk: relationship building, information giving and information gathering. Linear regression models analyzed the impact of child age on distributions of SDM-relevant talk for physician, parent and child. All models were adjusted for physician, parent and healthcare utilization characteristics as well as for clustering of visits by physician.

Population Studied: 100 children visiting one of 8 pediatricians or 7 family physicians purposively sampled to reflect diversity in practice setting, age, gender, ethnicity and specialty.

Principal Findings: Children's mean age was 5.4 years, range 0-18 years. Physicians spoke 63% of visit talk with no significant change across child ages. Parents spoke 31% of visit talk, decreasing by 1.4% for each year of child age, p<0.001. Children spoke the remaining 6% of visit talk, increasing by 1.4% for each year of age, p<0.001.
distribution of SDM-relevant talk remains relatively unchanged. For parents, the physicians engage in more information gathering, both at the expense of less relationship building talk. Regardless of child age, while child talk occurs at the expense of less relationship building talk. For parents, the distribution of talk categories was unchanged. For children, per year of age, relationship building talk decreased by 1.0% and information giving talk increased by 0.7%, each p<.001; information gathering talk was unchanged.

Conclusions: Physician talk consistently dominates visit talk regardless of child age, while child talk occurs at the expense of parent talk. With regard to SDM-relevant talk, as children mature they engage in more information giving while physicians engage in more information gathering, both at the expense of less relationship building talk. For parents, the distribution of SDM-relevant talk remains relatively unchanged across child ages.

Implications for Policy, Delivery or Practice: As children approach maturity, troubling changes occur in the distribution of SDM-relevant talk for both physicians and children. Reductions in relationship building talk by both physician and child and the lack of increasing information gathering talk by children may reduce the ability to effectively address the difficult health issues faced by adolescents. Physicians should work to enhance both relationship building and information gathering talk by children as they mature.

Primary Funding Source: AHRQ

- Where do Graduating Pediatric Residents Seek Practice Positions? The Relation Between Primary Care Service Area Characteristics and the Practice Searches of Pediatric Residents

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Research Objective: To profile the characteristics of areas that graduating pediatric residents are targeting in their job search and to explore whether residents applying to high-pediatrician-supply primary care markets experience job search difficulty.

Study Design: The Dartmouth Primary Care Service Areas (PCSA) project aggregated ZIP Code Tabulation Areas into 6,542 discrete primary care markets based on a patient origin study of 1999 Medicare Part B and Outpatient claims data. PCSAs represent the actual travel patterns of patients for primary care services, and validity analyses have demonstrated utility for pediatric services. PCSA population and providers were characterized using data from the 2000 US Census and 2001 AMA/AOA Physician Masterfiles. Pediatric residents’ targeted communities for jobs were linked to these PCSAs.

Population Studied: A national random sample of 500 graduating categorical pediatric residents were surveyed from May to August, 2003. After 4 mailings, 308 residents (62%) completed the survey.

Principal Findings: A total of 44% of graduating pediatric residents (N=136) applied for general practice positions. The remainder pursued subspecialty fellowships (31%), chief residencies (12%), other jobs (7%), or time off (5%). The characteristics of the PCSAs that residents applied to differed from the average PCSA characteristics. These areas had higher ratios of general pediatricians to 100,000 children (91 vs. 32, p < .001), had higher median household incomes ($47,856 vs. $38,515, p < .001), and were more likely to be an urban area (92% vs. 46%, p < .001). Other factors associated with urban areas were also higher for these areas, including the percentage of children who are black (16% vs. 10%, p = .001) or Hispanic (17% vs. 10%, p < .001). Residents applying to higher supply areas were significantly more likely to report moderate or considerable difficulty in their job search (51%) than were residents applying to medium (40%) or lower (25%) supply areas (p = .014). Despite these difficulties, 80% of residents reported being offered their most desired position, and nearly all of them (90%) accepted that position.

Residents were asked if they would consider practicing in a small town or rural area for 3 years for varying levels of debt relief. 52% of residents reported interest if there were relief of 60% of their debt, 69% reported interest for 80% relief, and 83% reported interest for complete relief.

Conclusions: Residents were more likely to seek jobs in urban areas with higher pediatrician supply and household income. Residents applying for positions in other regions experienced an easier job search. Many residents expressed interest in working in a small town or rural area for a limited time, but only if substantial debt relief were offered.

Implications for Policy, Delivery or Practice: Although there is considerable maldistribution of pediatricians in the US, residents continue to prefer high-supply areas. Diffusion of pediatricians into lower supply areas will require targeted incentives beyond current programs and labor market forces.

Primary Funding Source: HRSA

- Use of Specialty Mental Health Services in a Child and Adolescent Medicaid Population

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Research Objective: The objectives were to compare the demographic and clinical characteristics of youths receiving mental health services in a managed care/fee-for-service setting versus those referred to a specialty mental health carve-out program and to determine whether the complexity of psychotropic treatments was associated with referral to specialty mental health services.

Study Design: This is a two-year (1998-1999) cross-sectional study using computerized administrative claims to examine community mental health services for children and adolescents.

Population Studied: This paper studies youths < 20 years old enrolled in one state Medicaid program who received any mental health services between January 1, 1998 and December 31, 1999 (n=14,353). Mental health services were defined by at least one claim associated with 1) a mental disorder International Classification of Disease 9th Edition (ICD-9-CM) diagnosis; 2) a mental health Current Procedural Terminology (CPT) code; or 3) a psychotropic medication.
Principal Findings: Up to 30 unit hours of mental health services in a managed care/fee-for-service payment system were allowed before admission to the specialty mental health carve-out program. Among 14,353 children and adolescents who received any mental health services, 2,122 (15%) were admitted to the specialty mental health carve-out program. Those admitted to the specialty mental health program were more likely to be 10-19 years old, white, in foster care or the State Children’s Health Insurance Program (SCHIP), have comorbid psychiatric disorders, and receive multiple psychotropic medications. There were no differences by gender. Disruptive behavior disorders (i.e., attention-deficit/hyperactivity disorder (ADHD) conduct disorder, and oppositional defiant disorders), internalizing disorders (i.e., anxiety, depression), and substance abuse disorders as well as stimulant, antidepressant, antipsychotic and mood stabilizing medication use were greater among users of specialty mental health services. Controlling for age and gender, the odds of specialty mental health service use was lower among blacks (OR=0.85; 95% CI=0.76-0.95) and Hispanics (OR=0.75; 95%CI=0.66-0.84) compared with whites, greater among foster care (OR=5.6; 95%CI=4.6-6.9), the low-income (OR=2.4; 95%CI=2.1-2.7), and SCHIP (OR=3.4; 95%CI 2.3-4.9) compared with the disabled, and greater with multiple psychotropic (OR=2.0; 95%CI=1.9-2.1) versus no psychotropic treatment. The average duration of treatment for the 2,122 admitted to the specialty mental health program was 216 days (SD=283 days). Children and adolescents received 1-7 different types of services, of which the average was 2. The services provided in rank order were: crisis management (31.8%), outpatient (17.5%), intensive outpatient (12.4%), psychiatric inpatient (11.4%), day treatment (11.4%), residential (7.6%), partial hospitalization (7.5%), and clinical management (0.4%).

Conclusions: The use of specialty mental health services in this child and adolescent Medicaid population comprised a small proportion of those who had any mental health service in the managed care/fee-for-service programs. Multiple psychotropic medication treatments were significantly associated with specialty mental health services, after controlling for demographic, clinical, and provider characteristics. Further studies are warranted to determine individual trajectories of psychopathology and psychotropic treatments in traditional managed care/fee-for-service settings after discharge from specialty mental health programs.

Implications for Policy, Delivery or Practice: Future studies should assess individual trajectories of psychopathology and psychotropic treatments in managed care/fee-for-service settings after discharge from specialty mental health programs. This would inform policy and program development to enhance community mental health services, outcomes and quality of care.

- A Statewide Assessment of Childhood Immunization Rates: Comparisons of Managed Care Fee-for-Service Among the Virginia Medicaid Population, 1997-1999. Victoria Doyon, M.S., Peggy Jo Maddox, Ed.D., R.N., Victor Timotin, M.B.A., M.S.H., David Creuss, Ph.D.

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Research Objective: To estimate the immunization status for all two-year olds within a state Medicaid system and to compare immunization rates using standardized practice guidelines by health care delivery systems, payment sources and geographic regions.

Study Design: We combined retrospective data form the Department of Health and Medicaid managed care and fee-for-service administrative files for two year olds enrolled in Medicaid in the Commonwealth of Virginia (1997-1999). We pooled administrative data across public and private provider delivery systems with data from a survey of current provider of record. The resulting best available records were used to assess immunization status based on the American Academy of Pediatrics guidelines. Immunization rates were compared using CDC’s CASA reporting software for: 1.) All children “continuously” eligible for Medicaid and all other Medicaid enrollees; 2.) Managed care and fee-for-service service delivery systems; 3.) Five geographic regions; and 4.) Other socio-demographic variables.

Population Studied: All children who were enrolled in Medicaid-aged 24 months during fiscal year 1998 and 1999--and a comparison population of children who were continuously enrolled in Medicaid (i.e., 180 days cumulative enrollment allowing for a 45 day break during the study period). For all children who met the continuously enrolled criteria, further comparisons were made across Medicaid managed care and FFS programs and by geographic regions.

Principal Findings: Children continuously enrolled in a Medicaid comprise 55% of all 24-month-old Medicaid enrollees. Immunization rates achieved by 24 months for the recommended series 3/3 (12 vaccines) and 4/3 (16 vaccines) were higher among those children continuously enrolled compared to all other Medicaid enrollees observed. The inclusion of public sector immunization records contributed significantly to the observed higher immunizations rates within the study population. While immunization rates vary by service setting, geographic region, and demographic variables, the observed disparities in rates by Medicaid program enrollment status are consistent statewide.

Conclusions: Children continuously enrolled in Medicaid represent a comparative majority of all enrollees. Continuous enrollment is associated with higher immunization rates achieved compared with children not continuously enrolled in Medicaid. Current Congressional and State policies to expand Medicaid eligibility for uninsured children will require coordinated public and private administrative and clinical strategies.

Implications for Policy, Delivery or Practice: State Medicaid programs face economic, social and political challenges in serving these most vulnerable populations. This study shows that achieving national childhood immunization goals
requires collaborative administrative and clinical practices. Efforts to facilitate enrollment/re-enrollment appear critical to achieving national immunization goals. Patterns of state Medicaid enrollment childhood immunization rates have implications for current health insurance studies. Currently, 24% of children through age 18 were insured by Medicaid or SCHIP programs and 12% of US children are estimated to be uninsured. Medicaid enrollment and reenrollment management is essential to ensure access to essential public health services.

**Primary Funding Source:** Other Govt

- **Polypharmacy among Children and Adolescents Treated in Routine Psychiatric Practice**
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  **Research Objective:** To assess rates and correlates of concomitant pharmacotherapy in children and adolescents treated by psychiatrists in the full range of public and private treatment settings.

  **Study Design:** Cross-sectional observational data from the 1997 and 1999 American Psychiatric Practice Research Network (PRN) Study of Psychiatric Patients and Treatments (SPPT) were used. A national sample of 392 psychiatric patients under 18 years of age (mean=12.7) were systematically selected by psychiatrist-members of the American Psychiatric Practice Research Network (PRN). Analyses were performed using SUDAAN to adjust for the weights and the nested sampling design. In this study concomitant pharmacotherapy is defined as the concurrent use of two or more psychotropic medications for the treatment of emotional or behavioral problems in children and adolescents (Safer, Zito, dos Reis 2003).

  **Population Studied:** A total of 18 PRN psychiatrists provided clinically detailed data on 392 child and adolescent patients. Approximately 70% of the patients were male; 75% white, 13% African American, and 6% Hispanic.

  **Principal Findings:** Findings indicate that 84.5% of child and adolescent patients treated by psychiatrists received one or more psychotropic medications for the treatment of emotional or behavioral problems; 41.6% of these 392 patients received concomitant pharmacotherapy. Patients on psychopharmacologic treatments received an average of 1.8 medications (range=1 to 6). Significantly higher rates of concomitant pharmacotherapy were observed among patients with bipolar disorder than those without (86% vs. 47%; p<0.001), patients with CGAS score of 50 or less than those with CGAS greater than 50 (65% vs. 47%; p<0.01), patients with a history of hospitalization than those never hospitalized (69% vs. 46%; p<0.01), patients with one or more Axis I (59% vs. 42%; p<0.05), Axis II (73% vs. 50%; p<0.05), or Axis III comorbidities (68% vs. 48%; p<0.05), or two or more Axis IV psychosocial problems (57% vs. 34%; p<0.05), and among patients with public insurance in contrast to those with private, selfpay, or other insurance (65%, 50%, 42%, 28% respectively; p<0.05).

  **Conclusions:** The majority of child and adolescent patients of psychiatrists were treated with psychotropic medications, and four out of every ten patients received two or more psychotropic medications. Patients with chronic and clinically complex conditions and those with public insurance were more likely to receive concomitant pharmacotherapy.

  **Implications for Policy, Delivery or Practice:** Given that the available evidence base for pharmacological treatment of most psychiatric disorders in children and adolescents lags behind that for adults, attention needs to be directed toward treatment strategies that are lacking in evidentiary support in this patient population. With high rates of concomitant pharmacotherapy among children and adolescents in psychiatric care, research on efficacy and safety for this treatment strategy is of utmost importance.

  **Primary Funding Source:** Other, The American Psychiatric Foundation; the Center for Mental Health Services; the Center for Substance Abuse Treatment, and the John D. and Catherine T. MacArthur Foundation.

- **Continuous Access of Health Care for School Ages Children**
  Bertha Fertil, M.G.A., M.P.H., DelRoy Williams, M.S.W., and Tracy Grant-Victor, M.S.W.

  **Presented by:** Bertha Fertil, M.G.A., M.P.H., Director, NYC HRA Medical Insurance and Community Services Administration, 15934 Riverside Drive, #2B, New York, NY 10032; Tel: 212.928.9264; E-mail: BFertil@aol.com

  **Research Objective:** There are approximately 10 million uninsured children in the United States. Of this group half a million reside in the state of New York. Ironically, with the creation of expanded children’s Medicaid and the State Child Health Plus programs, no child in the United States should be without health insurance. However, the gap continues to grow. Moreover, several children, after receiving one year of coverage, experience coverage gaps of 1.62 years or more even though they might still be eligible. The lives of these children are further complicated because many of these children live in poverty or in households with little income security where financial resources do not enter the home in a consistent manner. In addition, because of the numerous social, health and economic issues (employment with inflexible work hours, substance abuse, mental health issues, food and housing insecurity) the parents of these children might not recertify their children’s health insurance coverage on a regular basis even when a mail-in recertification process is instituted. After having their health insurance terminated, many of these families will only return when there is an emergency or pending health crisis. The objective of this research is to identify reasons why public health insurance recertification for children should be expanded from an annual process to a four-year process. In addition we will determine the average length of time the child remains within the Medicaid program when the parent does recertify as well as make recommendations as to how obtaining health insurance coverage could become part of the enrolling in and changing of school levels process.

  **Study Design:** In a review of 4112 currently active public health insurance cases for children between the ages of 12 to 18 who are receiving Medicaid, we analyzed the following variables using the Welfare Management System (WMS):
for many of the most vulnerable populations in the United States. In addition, current practices in place to make school entities referral units of the public health insurance agencies within different states do not go far enough. Within these programs there is a great lost to follow-up issue that arise in one organization sending forms and/or list to another organization. In addition, there is the added time which the parent must spend going from one organization to another. The four-year recertification process would provide children with a continuum of care during their formative years, thus enabling the states to potentially save resources in the long-term. This process would enable children to be able to meet their preventative health care milestones without further overwhelming low-income parents, who are already stressed by negotiating the public health care system. Most importantly, states would begin to see healthy children as inexpensive children to care for, streamline the process of obtaining health insurance; as well as the development of a new point of access that would be created by expanding the current Medicaid infrastructure into the public school system.

• Healthcare Utilization by Victims of Child Maltreatment
Eron Friedlaender, M.D.

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Research Objective: Examining the health service use of children prior to a maltreatment diagnosis may reveal patterns to identify at-risk children. The aim of this study was to determine whether maltreated children have ambulatory health service use patterns and diagnoses that differ from non-abused children.

Study Design: This case-control study used foster care administrative data linked to Medicaid data from a large urban municipality between 1994 and 1996. The primary outcome was a diagnosis of maltreatment. Primary exposure variables included the total number of ambulatory visits, the total number of emergency department (ED) visits, the frequency of injury-related diagnoses, the frequency of non-specific diagnoses that have previously been linked to abuse, and the number of primary care provider changes. Ambulatory visits were categorized as 0, 1-2, 3-5, or > 5. ED visits were dichotomized as 0 or > 0. Injury-related or non-specific complaint diagnoses were pre-defined using ICD-9 codes. Number of new primary care visits were categorized as 0, 1,or > 2. Analyses, controlling for race, were conducted using conditional logistic regression to account for matched cases and controls. Data are presented as odds ratios with 95% confidence intervals.

Population Studied: The source population included children 6 months to 5 years of age enrolled in fee-for-service Medicaid. Cases were defined as children placed in foster care for > 30 days and within 14 days of their first open case with the child welfare system. Controls were chosen from the fee-for-service Medicaid-enrolled patients without ICD-9 codes for child abuse or placement in foster care. Each case was matched to 4 controls by age, sex, and the number of Medicaid eligible months during the year prior to enrollment in the study.

Principal Findings: We identified 157 cases of new child maltreatment and 628 controls. The mean number of
ambulatory visits was 2.8 for cases and 3.0 for controls. The mean number of ED visits was 0.45 for cases and 0.52 for controls. Adjusting for race, children who changed primary care providers in the previous year had higher odds of maltreatment ($p=0.03$). Abused children were 1.6 times more likely than controls to have one change of care providers (95% CI: 1.04-2.41), and were 2.5 times more likely to change providers two or more times (95% CI: 1.09-5.79). Cases were also more likely to make frequent ambulatory visits. Victims of maltreatment were more likely to have 1-2 ambulatory visits vs. none: OR 1.54, 95% CI 0.95-2.5, and were more likely to make 3-5 visits vs. none: OR 1.91, 95% CI 1.19-3.09. However, there was no significant difference in the likelihood of having more than 5 ambulatory visits, in ED use, or frequency of injury or non-specific diagnoses.

**Conclusions:** Maltreated children were more likely than controls to change primary care practitioners in the year prior to identification of child abuse and had more frequent ambulatory visits. These may be markers of maltreatment or family instability.

**Implications for Policy, Delivery or Practice:** The results of this study may facilitate the early detection of children-at-risk for abuse.

**Primary Funding Source:** University of Pennsylvania Research Foundation

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**Study Design:** Adaptive PSC: We performed psychometric analyses and wrote software to develop the Adaptive PSC, and tested its efficiency in computer simulations. EnterVue: Observational study on use of EnterVue in routine pediatric office care.

**Population Studied:** Adaptive PSC: 21,150 children seen in a national sample of primary care practices. EnterVue: 898 families visiting several Midwestern pediatric offices.

**Principal Findings:** Adaptive PSC: Four latent psychosocial problem dimensions were identified through factor analysis: internalizing problems, externalizing problems, attention problems, and school problems. A simulated adaptive test measuring these traits asked an average of 11.6 questions per patient, and asked 5 or fewer questions for 49% of the sample. There was high agreement between the adaptive test and the full (35-item) PSC: only 1.3% of screening decisions were discordant (kappa = .93). This agreement was higher than that obtained using a comparable length (12-item) short-form PSC (3.2% of decisions discordant; k = .84).

EnterVue: Data show that Entervue is satisfactory to families. Answering a question on EnterVue requires a mean of 9.1 seconds (SD = 3.93), whereas families spend an average of 16.7 minutes (SD = 11.6m) in the waiting room and 8.3m (SD = 8.3m) in the examination room.

**Conclusions:** Our results show that multidimensional adaptive testing is an accurate and efficient technology for screening in primary care settings. Similarly, wireless tablet computers provide an effective method of gathering data from patients in pediatric waiting rooms and communicating test results to clinicians.

**Implications for Policy, Delivery or Practice:** Given the efficiency of computerized data collection and the distribution of families’ waiting times, comprehensive screening is feasible in the waiting room if questions are chosen adaptively.

**Primary Funding Source:** Other Govt, NIMH

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**• Engaging Parents in Decision Making**

Shirley Girouard, Ph.D, R.N., F.A.A.N.

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**Research Objective:** To evaluate the impact of a civics training program on parental engagement in the community and to assess knowledge and skills related to democracy benchmarks. As the nation and states struggle with budget deficits and resource allocations and with the increasing demand for public accountability, society’s ability to meet the needs of children is compromised. Given the vulnerability of children, their dependence on parents and other adults to speak for them and the necessity of providing children’s services that will assure healthy and productive adults of the future, programs and policies are needed to assure positive outcomes. Parents, especially in the public arena, are an underutilized resource for developing, implementing and assessing programs and policies to positively affect the health, education and overall well-being of children. This paper describes an innovative program of the Connecticut Commission on Children aimed at enhancing parental involvement through democracy and civic skills training and assessments.
provides the results of an evaluation of one program component.

Study Design: A descriptive study design assessed the foci and outcomes associated with the community projects of the civics training program participants. All projects conducted over a three-year period (N=333) in 13 communities in one state were analyzed using content analysis and descriptive statistics.

Population Studied: Parents who developed and implemented the 333 community projects represented diverse social, economic, ethnic and racial groups.

Principal Findings: Of the 333 projects, 40% addressed early childcare or educational issues; 19%, health and health care issues; and 13%, safety concerns. Remaining projects reflected skill development and personal growth in civic skills. The projects met one or more of the democracy benchmarks: all demonstrated knowledge about and skill in democratic participation. A number of projects focused on specific democracy benchmarks: 17% addressed social or economic growth issues; 19%, tolerance of diversity; and 14%, promotion of shared values and the public good.

Conclusions: The civic training program provided parents with knowledge and skills in civics and democracy that were translated into community activities and programs to enhance child health, education and safety. In addition, parents used their knowledge and skills to influence decision making by others, including policy makers at the community and state levels, to benefit children.

Implications for Policy, Delivery or Practice: When parents have knowledge and skills to affect the public domain of decision-making about children’s issues, they contribute significantly to better programs and policy. By providing opportunities for parents to enhance their civic training, this important constituency can bring about needed and appropriate change. Providers, educators, public officials, researchers and others should engage parents to improve children’s present and future health and well being.

Primary Funding Source: Other, state gov’t

• Patient Safety Risks in Clinician Communication During Hospital-Based Pediatric Care


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Research Objective: To describe effective and problematic clinician communication (communication between clinicians providing care for a patient) in hospital-based pediatric care and to identify, for problematic communication, the determinant characteristics related to patient safety risk.

Study Design: Clinicians were invited by an Ad Hoc Patient Safety Committee of a children’s hospital to participate in a focus group. Focus groups, within each discipline (neurology, neurosurgery, surgery, intensive care unit (ICU), and emergency medicine), were convened by profession and professional level (nurse managers, staff nurses, attending physicians, fellow/resident physicians and advanced practice nurses, nurse administrative coordinators). A standardized protocol, to assess the main means of communication (i.e., in-person, telephone, medical chart), to elicit discussion about effective and problematic communications, and to identify the characteristics of the communications, in particular those related to patient safety risk, was used. Focus group participants provided verbal consent and remained anonymous. The 90-minute focus groups were audio-taped and then, transcribed. Three investigators independently analyzed the data using a transcript-based approach to identify emerging themes and then, triangulate the findings to reach consensus. Basic characteristics (where, when, how, between whom, and what) were identified for all reported communications. Determinant characteristics for either effective or problematic communication with patient safety risk were sought.

Population Studied: Clinicians in a children’s hospital.

Principal Findings: Twenty focus groups were convened and included 65 clinicians with 2-7 participants per group. Daytime, in-person, “team” clinical communications (e.g. ward rounds, conferences) were reported as effective; those that included full participation of the entire team were described as most effective. All participants described problematic communication. Problematic communications with identified patient safety risks occurred: (1) during transitions (patient transfers between services or units, changes in attending/fellow/resident “coverage”, nursing shift changes); (2) in the scheduling of and getting studies and procedures performed; (3) for patients with complex medical/surgical conditions being cared for by multiple services; (4) for ICU patients managed by clinicians not primarily located in the ICU; (5) with non sub-specialized pediatric clinicians (nurses and physicians); and (6) with non-pediatric trained clinicians, particularly surgical clinicians, about medical management.

Conclusions: This research provides some initial information about the characteristics of effective and problematic clinician communications in pediatric hospital-based medical care. Six distinct contexts were related to problematic clinician communications with identified patient safety risks.

Implications for Policy, Delivery or Practice: Determinant characteristics of clinical communication that contribute to effective (i.e. daytime, team rounds) or problematic communication (i.e. transitions, non-pediatric trained clinicians) have been identified and should be useful in developing interventions to improve clinician communication. Further understanding of the contributions of additional factors such as knowledge, training, experience, resources, and organizational and spatial configuration is needed to reduce problematic clinical communication.

Primary Funding Source: N/A, Children’s Memorial Institute for Evaluation and Research, Children’s Memorial Hospital, Chicago, IL
• Overview of the Children’s Health Initiatives in Three California Counties and Their Evaluations
Embry Howell, M.S.P.H., Ph.D., Holly Stockdale, M.P.H., M.P.P.

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Research Objective: To evaluate the implementation and impact of the expansion of health insurance coverage to all low income children in three California counties.

Study Design: Several California counties have expanded health insurance coverage for all children, including Santa Clara, San Mateo, and Los Angeles counties. Each county has a comprehensive, multi-year evaluation of the expansion initiatives that includes a process evaluation (using site visits and focus groups) and an impact evaluation, that relies on a client survey of parents of recently enrolled children and children who have been enrolled for some time. There are several other unique components to each county’s evaluation design—such as provider, health insurance coverage, and crowd-out analyses. These different components will be described in the presentation.

Population Studied: Low income children in the three counties are the primary study group. Income and age groups included in the expansions differ somewhat from county to county. Since the insurance expansions do not include children who are eligible for other public programs (Medi-Cal/Medicaid or Healthy Families/SCHIP), they cover primarily undocumented children and children above 250% of the federal poverty level.

Principal Findings: Each county has designed a unique intervention, due to unique factors in the county, but with many common features across the three counties. Similarly, the evaluations have different emphases, and somewhat different methods, but with several common features and instruments. For example, all include site visits, focus groups, and a client survey. In all cases, it is necessary to contact and interview parents of undocumented children, and we will discuss the challenges and successes of the evaluations to date in accomplishing this.

Conclusions: The evaluations of these health insurance expansions will advance the understanding of the health care needs and experiences of undocumented families, and the special strategies that counties have devised for outreach and services delivery.

Implications for Policy, Delivery or Practice: These evaluations provide valuable lessons for other counties considering the adoption of health insurance expansions, both for children and other underserved groups.

Primary Funding Source: Other Foundation, Local Governments

• Impact Evaluation of a Medical Home Improvement Initiative for CSHCN
Moira Inkelas, Ph.D., M.P.H.

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Research Objective: To identify promising medical home improvement strategies targeting children with special health care needs, based on a statewide evaluation of a multi-tiered initiative with policy, community, and practice-level components.

Study Design: Qualitative evaluation of community-based interventions conducted between 2001-2003 as part of the California Medical Home Project. Interventions were organized and led by coalitions of stakeholders - including agency administrators, physicians, and parents - in seven California counties that in total serve nearly 50 percent of CSHCN in the state. Efforts to improve the quantity and quality of medical homes for CSHCN included: these community interventions; a policy group of state agency administrators designed to address state level policy barriers and opportunities for improved care coordination; and a Program Office based at Childrens Hospital Los Angeles that was staffed to provide resources and to diffuse learning among the local coalitions.

Population Studied: Coalition staff, agency administrators, participating providers and parent advisors in seven California counties.

Principal Findings: Five themes emerged across the 7 counties, which all documented health delivery improvements:
1-micro-innovations in identifying CSHCN in pediatric practices and identifying barriers to care within pediatric practices;
2-training curricula on medical home developed for providers and parents;
3-use of new tools to spread information about community resources;
4-pediatric provider knowledge of and linkage to family resource centers to provide needed supports to parents; and
5-accountability among agencies serving CSHCN. Strategies tested and evaluated including pediatric practice innovation as well as community efforts to improve coordination and streamline access to public programs. Promising strategies for sustainability include: curricula on local resources and eligibility pathways; parent training; and regular meetings among administrators, providers, and parents to strategize responsibility for resolving problems. Family resource centers began helping parents organize records and become more activated consumers. Innovative culturally appropriate strategies showed success with Latino families, and fathers. Collaborative learning among practices accelerated learning. A Statewide Coalition tackled policy and procedural barriers with limited success given the economic climate and the complexity of policy and administrative change.

Conclusions: The medical home concept represents a health service delivery strategy for children with special health care needs to achieve accountability, organization, communication, parents as partners in care, and responsiveness to the child and family’s needs. Focusing exclusively on changes to the pediatric practice achieves little practical improvement given limited resources, the influence of agency policies and roles, and the family-oriented supports that can be provided in the community. Coalitions demonstrated success in accessing practices and sharing information and tools that could be readily implemented.

Implications for Policy, Delivery or Practice: The medical home concept has been hard to put into practice. This project used the concept to galvanize attention to health care delivery system problems. This project identified strategies for success, including increased accountability of agencies to the
problems that pediatric providers face. Resources external to the pediatric practice - such as family resource centers - may play a pivotal role in providing the parent support and education that even comprehensive family-oriented practices lack the resources to provide.

**Primary Funding Source:** Other, California Healthcare Foundation

- **Evaluation of Private Provider Input into a City-Wide Immunization Registry**
  Maureen Kolasa, R.N., M.P.H.

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  **Research Objective:** Philadelphia’s immunization registry seeks to include all private and public health care providers who immunize children. Registry data can assist in determining and tracking immunization coverage levels by provider and geographical areas. More information on the accuracy and completeness of immunization registry data will increase confidence in the inferences drawn from these registries. The goal of this study was to determine the accuracy and completeness of Philadelphia’s immunization registry for children served by private providers located in areas at high risk for underimmunization.

  **Study Design:** The Philadelphia Department of Health conducted chart reviews of patients of all private providers receiving government-funded Vaccines-for-Children (VFC) vaccine and located in zip codes where preschool children are at greatest risk for low immunization rates. A simple random sample of 45 charts of children aged 19-35 months was selected in each of 30 practices (family physicians, pediatricians and hospital-based clinics). Chart data were compared to the immunization registry to determine the proportion of children missing from the registry and to assess differences in up-to-date (UTD) coverage rates between chart and registry data.

  **Population Studied:** Children being served by private providers located in areas at high risk for underimmunization in the City of Philadelphia.

  **Principal Findings:** Of the 620 children randomly selected for review, 567 (91.5%) were in the registry. Providers transferring data electronically to the registry had significantly more children in the registry than those whose data were manually entered into the registry (p=0.0015). The percentage of hospital-based children contained in the registry (97%) was higher than that of pediatricians (90%) and family practitioners (90%, p<0.05 for both). We observed significant differences (p<0.0001) in immunization coverage levels for the 4313 series (4 doses of DTaP vaccine, 3 doses of polio vaccine, 1 dose of MMR vaccine, 3 doses of haemophilus influenzae type b vaccine) between the chart (80% UTD) and registry (62% UTD) data. When immunization coverage levels were calculated based on registry data, those providers transferring data to the registry via an electronic file had significantly (p<0.001) higher coverage than those who sent a log form or billing printout to the health department for manual entry into the registry.

**Conclusions:** Although almost all children with chart records were in the registry, registry data were less complete and immunization coverage rates were significantly lower compared to chart data. Providers who use electronic transfer of data from the chart into the registry had more children in the registry and more complete registry data compared to providers who used log forms or billing printouts with manual data entry.

**Implications for Policy, Delivery or Practice:** These results indicate that electronic data entry systems should be encouraged in linking private providers with immunization registries. Electronic data entry systems in this study provided more complete immunization registry data than manual entry of immunizations into the registry.

**Primary Funding Source:** CDC

- **Churning: Disenrollment and Reenrollment in Wisconsin’s Medicaid and BadgerCare Programs**
  Nancy Lenfestey, M.H.A.

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  **Research Objective:** Churning, the process of repeatedly coming in and out of a health insurance program, can have adverse health and financial consequences. Discontinuities in coverage may lead to foregone preventive care, increased severity of illness and health care expenditures, and higher administrative costs. This study investigates disenrollment and reenrollment in Wisconsin’s Medicaid and BadgerCare programs to provide information on churning. Differences in patterns of disenrollment and reenrollment are examined for adult and child enrollees by eligibility group, cash assistance status, racial/ethnic group, and time period--pre- and post-BadgerCare.

  **Study Design:** A record was created for each episode of enrollment, defined as a period of continuous enrollment in Medicaid/BadgerCare regardless of switches between the two programs or between eligibility groups within programs. Kaplan-Meier survival curves and Cox proportional hazard models of the length of enrollment episodes and the number of months between episodes were estimated for new and newly ended episodes, respectively, in two different time periods: 1) a 2-year period preceding BadgerCare implementation, and 2) a 2-year period following BadgerCare implementation. Survival curves and hazard rates were compared for the first 32 months from enrollment and disenrollment.

  **Population Studied:** Medicaid and BadgerCare enrolled adults (> 18 years) and children by age group (0 to 5 and 6 to 18 years) in three different enrollment categories --AFDC-related, Healthy Start, and BadgerCare.

  **Principal Findings:** Disenrollment and reenrollment rates were similar among BadgerCare and Medicaid beneficiaries. Enrollment episodes were substantially longer for Medicaid enrollees following BadgerCare implementation. This result was most dramatic for adult Healthy Start pregnant women; only 12% remained enrolled 12 months from enrollment prior to BadgerCare whereas 40% did so following BadgerCare. Children were less likely than adults and younger children were less likely than older children to disenroll early; cash assistance recipients were less likely to disenroll early than
enrollees not receiving cash assistance; and Hispanics were more likely to disenroll early than white non-Hispanics. Furthermore, short periods of disenrollment between two enrollment periods were common among all enrollees, and were even more prevalent following BadgerCare implementation. As many as 15 to 20% of children reenrolled after only 1 month and 60 to 70% had reenrolled within the first 32 months following disenrollment. Children, cash assistance recipients, and minorities were more likely to reenroll after short periods of time relative to other enrollees. BadgerCare beneficiaries were somewhat less likely to reenroll than AFDC-related Medicaid beneficiaries.

Conclusions: While evidence shows that churning is a substantial problem, particularly among children and minorities, continuity of coverage has improved significantly in Wisconsin’s Medicaid program since the implementation of BadgerCare.

Implications for Policy, Delivery or Practice: The high amount of churning among children and minorities should be investigated further to determine possible adverse effects on compliance with recommended well-child visit and immunization schedules.

Primary Funding Source: CMS

• Contracting for Coordination of Behavioral Health Services in Privatized Child Welfare and Medicaid Managed Care
D. Richard Mauery, M.P.H.

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Research Objective: This study examined coordination between privatized child welfare initiatives and Medicaid managed care systems for the delivery of behavioral health care services for children and families in the child welfare system. Specific objectives: 1) to assess how states' expectations as embodied in their contract documents are actually happening during program implementation; and 2) to identify promising approaches for delivery of coordinated behavioral health care services and contracting that can be shared with other stakeholders. The goal was to highlight the real world experiences and lessons learned that others may draw upon when designing and implementing similar contracts for systems of care.

Study Design: Two linked qualitative research methods: 1) content analysis of Medicaid managed care and privatized child welfare contract documents that specify requirements for care coordination and interagency collaboration, and 2) site visits in four states to interview key stakeholders about how these paper requirements were playing out in practice.

Population Studied: Staff of state child welfare, behavioral health, and Medicaid agencies; managed care organizations; family organizations; and foster and birth parents of children in child welfare systems in El Paso County, Colorado, Franklin County, Ohio, Massachusetts, and Missouri.

Principal Findings: Despite varying degrees in scope and specificity of language regarding collaboration and care coordination, the child welfare contracts all encompassed service delivery expectations that acknowledge the importance of having access to an array of behavioral health services for children and their families (including supportive wraparound services) to maximize the likelihood of achieving successful permanent placements within shorter periods of time. All contracts covered standard behavioral health treatments. Specialized services, such as domestic violence treatment and sexual abuse/offender treatment, were far less likely to be covered in the contracts, particularly the Medicaid contracts. The success of interagency collaborations depends largely on key leadership having the authority, and taking the responsibility, for development and implementation of programs and systems that stress a coordinated approach to holistic care that integrates health, behavioral health, and permanency issues. Multiple categorical funding and reimbursement streams can create treatment silos that can hamper care coordination when children are perceived as belonging to one funding stream or another. Even well-written contracts cannot overcome shortages of providers with child and adolescent treatment expertise that result from low reimbursement rates and/or under-funding and under-staffing of public and private child welfare and behavioral health systems.

Conclusions: Agencies and contractors are encountering difficulties fulfilling their contractual care coordination obligations, largely due to external factors such as the inadequate supply of specialized treatment providers and insufficient case rates and Medicaid reimbursements. Interagency collaborations serve to bring together decision-makers who can apprise their colleagues of the intended and unintended effects of their actions on their programs.

Implications for Policy, Delivery or Practice: Contract specifications, while critical, are only an essential first step to ensure effective care coordination for children with behavioral health needs and their families. Ongoing attention must be paid to implementation issues and to the factors that impede adherence to contract specifications and potentially threaten the achievement of positive outcomes for children and their families.

Primary Funding Source: Other Foundation, Center for Health Care Strategies, Inc.

• Quality Transformation: Assessing the Impact of Computerized Order Sets on Asthma Quality Indicators for Inpatients
Ann McAlearney, Sc.D., M.S.

Presented by: Deena Chisolm, Ph.D., Post-Doctoral Research Fellow, Center for Health, Outcomes, Policy, and Evaluation Studies, The Ohio State University, 320 West 10th Avenue, A-333, Starling-Loving Hall, Columbus, OH 43210; Tel: 614.293.6535; Fax: 614.293.7710; E-mail: chisolm.1111@osu.edu

Research Objective: Condition-specific order sets within computerized physician order entry--CPOE--systems are designed to decrease unnecessary practice variation and to promote best practices. These sets build evidence-based treatment recommendations into the normal flow of patient care, making the use of evidence an integral part of the care process. Most researchers and policy-makers, including the influential LeapFrog Group, agree that this integration will improve quality of care. Columbus Children’s Hospital, Inc.--CCHI--has recently implemented a CPOE system with disease-specific order sets to reach this goal. Our research objective of having access to an array of behavioral health services for children and their families (including supportive wraparound services) to maximize the likelihood of achieving successful permanent placements within shorter periods of time. All contracts covered standard behavioral health treatments. Specialized services, such as domestic violence treatment and sexual abuse/offender treatment, were far less likely to be covered in the contracts, particularly the Medicaid contracts. The success of interagency collaborations depends largely on key leadership having the authority, and taking the responsibility, for development and implementation of programs and systems that stress a coordinated approach to holistic care that integrates health, behavioral health, and permanency issues. Multiple categorical funding and reimbursement streams can create treatment silos that can hamper care coordination when children are perceived as belonging to one funding stream or another. Even well-written contracts cannot overcome shortages of providers with child and adolescent treatment expertise that result from low reimbursement rates and/or under-funding and under-staffing of public and private child welfare and behavioral health systems.

Conclusions: Agencies and contractors are encountering difficulties fulfilling their contractual care coordination obligations, largely due to external factors such as the inadequate supply of specialized treatment providers and insufficient case rates and Medicaid reimbursements. Interagency collaborations serve to bring together decision-makers who can apprise their colleagues of the intended and unintended effects of their actions on their programs.

Implications for Policy, Delivery or Practice: Contract specifications, while critical, are only an essential first step to ensure effective care coordination for children with behavioral health needs and their families. Ongoing attention must be paid to implementation issues and to the factors that impede adherence to contract specifications and potentially threaten the achievement of positive outcomes for children and their families.

Primary Funding Source: Other Foundation, Center for Health Care Strategies, Inc.

• Quality Transformation: Assessing the Impact of Computerized Order Sets on Asthma Quality Indicators for Inpatients
Ann McAlearney, Sc.D., M.S.

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Research Objective: Condition-specific order sets within computerized physician order entry--CPOE--systems are designed to decrease unnecessary practice variation and to promote best practices. These sets build evidence-based treatment recommendations into the normal flow of patient care, making the use of evidence an integral part of the care process. Most researchers and policy-makers, including the influential LeapFrog Group, agree that this integration will improve quality of care. Columbus Children’s Hospital, Inc.--CCHI--has recently implemented a CPOE system with disease-specific order sets to reach this goal. Our research objective
for this project was to determine the impact of CCHI’s asthma order set on indicators of asthma care quality.

**Study Design:** Three indicators of asthma care quality were measured: use of systemic corticosteroids, use of metered-dose inhalers, and use of pulse oximetry. Rates for each indicator were calculated for three patient groups: those admitted prior to order set roll-out—pre-set; those admitted after roll-out without order set used—no set; and those admitted after roll-out with order set used—set. Utilization rates for the three groups were compared using raw frequencies and logistic regression. Length of stay, total charges, and pharmacy charges were calculated to measure the impact of order set use on cost efficiency. Group differences for these variables were tested using ANOVA. All analyses for this study were conducted using data from the CCHI Decision Support System and the Eclypsis CPOE system.

**Population Studied:** The study population included patients with a primary ICD-9 diagnosis code of 493.xx admitted to CCHI between November 1, 2001 and November 30, 2003. Patients admitted directly to the pediatric intensive care unit were excluded. The population analyzed included 261 pre-set patients, 63 no set cases, and 466 set patients.

**Principal Findings:** There was a significant positive relationship between asthma order set use and selected quality indicators. Multivariate logistic regression showed that order set patients are significantly more likely to have systemic corticosteroids used during the admission—odds ratio of 6.08, significantly more likely to have an inhaler used—odds ratio of 1.41, and significantly more likely to have pulse oximetry—odds ratio of 2.62. No set patients did not differ significantly from pre-set patients on any indicator. The increase in appropriate treatment use did not lead to any increase in cost. No significant differences were found in total charges, pharmacy charges, or length of stay between the three study groups.

**Conclusions:** Use of a disease-specific order set within a CPOE system can significantly improve healthcare quality across a variety of quality indicators with no associated increase in charges. Consistent use of order sets based on best practices can, therefore, improve the overall quality of care provided by a healthcare institution without increased cost.

**Implications for Policy, Delivery or Practice:** Transforming the delivery of healthcare through the use of information technology can be an expensive, complex process. However, this major investment can lead to measurable and meaningful improvements in healthcare delivery. These results give further credence to policy makers’ calls for expanded use of CPOE systems with condition-specific order sets.

**Quality Transformation: Implementation of Computerized Order Sets**

**Ann McAlearney, Sc.D., M.S.**

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**Research Objective:** Creating an environment focused on quality requires a transformation of the way in which healthcare is delivered. Columbus Children’s Hospital, Inc.—CCHI—has attempted this transformation by implementing a Computerized Physician Order Entry—CPOE—System that includes disease-specific order sets. The research objective of this project was to assess order set use and to identify factors impacting the use of three order sets: asthma, community-acquired pneumonia—CAP, and post-appendectomy.

**Study Design:** Eligible patients for each order set were identified from the CCHI Decision Support System. These patients were matched with data from the Eclypsis CPOE system to determine order set use. Order set use rates by month were calculated for each order set and significance of trends was tested using linear regression. Potential predictors of order set use studied included: stage of implementation, patient age, patient race, payor, admit day, admit time, emergency department—ED—admission, and length of stay. Relationships were tested using chi-squared analysis and multivariate logistic regression.

**Population Studied:** The study population includes patients admitted to CCHI between November 1, 2001 and November 30, 2003. The study included 529 asthma patients defined by a primary ICD-9 diagnosis code of 493.xx, excluding those admitted to the pediatric intensive care unit, 277 appendectomy patients defined by ICD-9 procedure codes of 47.09 or 47.01, and 210 CAP patients defined by a primary ICD-9 diagnostic code of 486.xx. Patients with cystic fibrosis were excluded from analysis because a CF-specific pneumonia order set is in place.

**Principal Findings:** No single pattern is seen in the uptake of this new technology. The asthma order set shows a linear trend of increasing use after implementation, but no such trend is seen in appendectomy or CAP. Order set use levels are also inconsistent. Six months after implementation, the asthma order set was used in 90 percent of admissions and the post-appendectomy order sets were used in 70 percent of admissions. Use of the CAP order set, however, did not reach 20 percent. Variables associated with order set use varied by set. Use of the asthma order set was associated with weekend admission, ED admission, older age and later stage of order set implementation. Use of the post-appendectomy order set was associated with ED admission and with longer stays. None of the studied predictors impacted use of the CAP order set.

**Conclusions:** There is no single pattern of uptake of order sets in the early implementation period. Predictors of use also vary by set.

**Implications for Policy, Delivery or Practice:** The goal of order set implementation is to reduce unnecessary practice variation while promoting best practices. This goal is best met when order sets are used consistently within their target populations. This evaluation shows that uptake trends in order set use vary by set as do predictors of use. Healthcare systems looking to implement computerized order sets must, therefore, consider the specific factors that may impact the use of each set rather than relying on a one-size-fits-all roll-out strategy.
4. Staff effort to include you in decisions about your child’s treatment
5. Accommodations and comfort for visitors

Conclusions: A history of specialization may provide dedicated children’s hospitals with more experience with family-centered care issues, resulting in higher mean scores, but these issues still remain high priorities for additional improvement from the family’s perspective in both children’s hospitals and general acute care hospitals.

Implications for Policy, Delivery or Practice: This poster will be solutions-oriented, with each of the top opportunities for improvement being accompanied by practical, family-centered quality improvement ideas.

• Balancing Work and Personal Life: Perceptions of Part-Time and Full-Time Pediatricians
Karen O’Connor, Avrum Katcher, M.D., Hanna Sherman, M.D., William Cull, Ph.D.

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Research Objective: Reduced working hours are perceived to be a means of balancing personal and professional life, however, it is unknown if part-time pediatricians’ (PTP) sense of work/family balance differs from their full-time colleagues (FTP). This study assesses differences between part-time and full-time pediatricians’ satisfaction with personal and professional life.

Study Design: A self-administered questionnaire was mailed in April-August 2003 to a national random sample of 1611 pediatricians; response rate=63%. Survey questions explored pediatricians’ satisfaction with various areas of professional life and amount of time to pursue family and personal activities, level of stress balancing work and family responsibilities, factors perceived to improve work/family balance, and attitude towards medicine as a career path. Bivariate and multivariate analyses assessed differences between groups and associations with selected variables.


Principal Findings: Seventeen percent of pediatricians work part-time, averaging 32 hours/week; 87% of PTP are female v 47% of FTP (p<.001); 73% of PTP have minor children v 50% of FTP (p<.001). PTP are significantly more likely than FTP to be satisfied with the amount of time they spend with their children (62% v 39%, p<.001), friends (34% v 25%, p<.05), and in community activities (31% v 21%, p<.05); there are no differences in reported satisfaction with time for spouse, hobbies or caring for elderly relatives. More PTP than FTP say they are satisfied with number of hours worked (68% v 43%, p<.001), time for administrative work (46% v 30%, p<.001), and work environment (79% v 68%, p<.05). Satisfaction with patient interactions, relationships with colleagues, style of practice, involvement with professional societies, and income did not differ. Overall, 28% of PTP are satisfied with the balance between work and personal responsibilities compared to 17% of FTP (p<.01); 48% of FTP say reduced work hours would make the greatest overall improvement in this balance. In logit models (with PT employment, age and gender included), working PT and age >44y are predictors of
satisfaction with time spent with children (OR 2.95 and OR 1.49, respectively) and work/family balance (OR 2.15, OR 2.97); gender has no effect. A majority of FTP and FTP (70%, 72%) say they would choose medicine again as a career; however, only about one-half (45%, 50%) would recommend medicine to others.

Conclusions: Reduced working hours positively affects pediatricians’ sense of work/personal balance. FTP are more satisfied with their personal activities, and express similar or greater professional satisfaction than FTP.

Implications for Policy, Delivery or Practice: Desire for improved balance between personal and professional life may affect the structure of the future pediatric workforce, as interest in part-time positions is predicted to increase in coming years.

Primary Funding Source: American Academy of Pediatrics

Regionalization of Non-Cardiac Neonatal Surgery in California: Is it Geographically Feasible?

Ciaran S. Phibbs, Ph.D., Roderic H. Phibbs, M.D., Susan K. Schmitt, Ph.D., Diana L. Farmer, M.D., Laurence C. Baker, Ph.D., Beate Danielsen, Ph.D.

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Research Objective: While the association between surgical volume and mortality risk has been demonstrated for neonatal cardiac surgery, there have been no studies that look at this association for non-cardiac neonatal surgery, or at the feasibility of regionalizing these cases. The objectives of this study were to:

- Look at where neonatal surgery was being performed.
- See if it was geographically feasible to concentrate neonatal surgery in hospitals that perform high-volumes of these procedures.
- See if the number of non-cardiac neonatal surgeries a hospital performs was associated with mortality for neonates who require major surgery.

Study Design: California birth certificates for 1991-2000 were linked to death certificates, and hospital discharge data, including neonatal transfers. ICD-9 procedure codes were used to identify major non-cardiac surgical procedures.

Descriptive data were summarized by NICU level of care and hospital surgical volume. Distance was measured using straight-line distance between hospitals. Data from the birth certificate and discharge abstracts were used to control for clinical risk factors in logistic regression models to examine the association between surgery volume and mortality risk.

Population Studied: All births in California that 1991-2000 who underwent major non-cardiac surgery before they were discharge home.

Principal Findings: A majority of the non-cardiac neonatal surgery was performed at tertiary centers that had high surgical volumes. In 1991 the 12 hospitals that performed at least 50 surgeries did a total of 448 (58%) of the 1638 surgeries performed in California. But, in 1991 there were 37 hospitals that performed less than 15 major non-cardiac surgical procedures on neonates, and an additional 21 hospitals that performed between 15 and 49 of these surgeries. These numbers were similar over the 1990s, except that there was a modest decline (21 to 16) in the number of hospitals with moderate surgery volumes. Most of the moderate surgery volume hospitals were State-certified to perform neonatal surgery (16 of 21 in 1991 and 16 of 16 in 2000). Only 5 of the 37 low-volume providers were certified to perform neonatal surgery in 1991. This increased to 17 of 38 in 2000. All of these moderate volume hospitals and virtually all of the low volume hospitals were located in major urban areas within reasonable geographic access to hospitals that had high surgical volumes. There was no significant volume-outcome effect on mortality when all non-cardiac surgical cases were considered, but many of these procedures were for conditions not associated with high levels of mortality. The volume effect may be significant for higher-risk procedures, or for other measures of outcome.

Conclusions: While 60% of non-cardiac neonatal surgery was performed in hospitals that were high-volume providers of pediatric surgery, there were relatively large numbers of hospitals that performed low volumes of neonatal surgery. All but 6 of the hospitals with low surgery volume were close to a high-volume provider.

Implications for Policy, Delivery or Practice: Regionalizing non-cardiac neonatal surgery in California to high-volume providers is geographically feasible; virtually all of the surgery is already being performed at hospitals near a high-volume provider.

Primary Funding Source: Other, NICHD

Improving Data Quality: A Parent-Completed Computer Interview to Capture Medication History

Stephen Porter, M.D., M.P.H.

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Research Objective: The quality of information available to clinicians impacts the successful implementation of guideline-supported care. Physicians in the emergency department (ED) face multiple barriers in gathering and using historical data to support quality and reduce errors. We developed and tested a bilingual, multimedia, touch-screen interface called ‘the asthma kiosk’ to examine parents' provision of medication data. Our specific aims were: 1) To estimate the validity of parents’ electronically-entered medication history for asthma, and 2) To compare the parents’ kiosk entries to the medication data documented by the triage nurse and ED physician.

Study Design: We recruited a prospective cohort of parents to use the kiosk and independently enter their children’s detailed medication history regarding name, route of delivery, form, dose and frequency. Clinical providers were blinded to parents’ kiosk data. The gold standard (GS) for comparison was a structured telephone interview conducted with parents 3-5 days after the ED visit during which parents gathered and reviewed all asthma medications in the home. Report of a specific medication was considered valid if it was both accurate and complete according to the GS.

Population Studied: Parents of asthmatic children ages 1 year to 12 years presenting to the ED of an urban Children’s hospital were eligible for enrollment.
Principal Findings: Sixty-six of 114 eligible parents (57.9%) participated. Forty-nine of 66 parents (74.2%) completed the GS interview. Data from 40/49 parent kiosk entries, from 40/49 nurse records, and from 47/49 physician records were compared to the GS. The GS interview generated 99 instances of medications across the 40 parent kiosk entries, 95 instances of medications across 40 nurse records, and 116 instances across 47 physician records. Parents documented medication name with a significantly higher rate of validity (92/99 (92.9%, 95% LCI 86.6%)) compared to both nurses (54/95 (56.8%, 95% LCI 67.0%)) and physicians (85/116 (73.2%, 95% UCI 81.1%)). For report of route, form and dose of medications, the parents’ kiosk entries demonstrated significantly higher validity than documentation by nurses or physicians. Twelve of 40 parents (30%, (95% LCI 16.6%)) documented a valid detailed account of all asthma medications compared to 0/40 nurse records [0%, (95% UCI 8.8%)] and 0/47 physician records [0%, (95% UCI 7.6%)].

Conclusions: Parents’ electronic report of asthma-specific medications improves the validity of medication history as currently documented by ED nurses and physicians.

Implications for Policy, Delivery or Practice: These findings support a role for patients in quality improvement processes and initiatives. Patients can be a reliable source of data to inform computerized clinical guidelines as well as to promote medication safety.

Primary Funding Source: AHRQ, Charles H. Hood Foundation

• Health Services and Children with Special Health Care Needs: The Role of Family Poverty in Information and Access

Shirley Porterfield, Ph.D., Timothy McBride, Ph.D.

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Research Objective: To examine the association between family poverty, parental education level, perceived necessity, and use of health care services among children with special health care needs. The role of health services for children with special health care needs, both in terms of what they need and what they use, is analyzed, contrasting needs specified by low-income and low-education parents with needs specified by higher-income/education parents, holding severity of functional limitations constant.

Study Design: The project uses data drawn from the National Survey of Children with Special Health Care Needs (CSHCN), collected in 2001 by the Centers for Disease Control and Prevention. Reasons for delay in receiving services or for not receiving the appropriate level of services, given family characteristics and severity of children’s functional limitations are examined descriptively. Formal econometric models are used to examine the relationship between family poverty, mother’s education level, child functional limitations, health insurance coverage, and reported need for and access to specialized health services. Since by definition all CSHCN use health services, a multinomial logit model is estimated with dependent variable equal to 0 if the service was not considered necessary, 1 if the service was considered necessary but not received, and 2 if the service was considered necessary and received. Estimations are completed for each of 14 health services.

Population Studied: The CSHCN survey is designed to provide state and national estimates on the prevalence and health services use of children with special health care needs. The data set contains 38,866 interviews.

Principal Findings: Regardless of the severity of children’s functional limitations, low-income families (below 200% of poverty) and families in which the mother has a high school education or less are significantly less likely to report that their child needs routine preventive, specialist, or dental care, or prescription medications (p<0.05). These families are significantly more likely to report that their child needs mental health care. Among families with children with the most severe functional limitations, those with less well-educated mothers are significantly less likely to report family needs for professional care coordination or respite care.

Conclusions: Nearly one in five families in the U.S. have a child with special health care needs. CSHCN are significantly more likely to live in families in poverty. Though CSHCN are as likely as other children to have health insurance coverage, the quality of care received by these children, especially if in poverty, is inferior. This suggests that some CSHCN, especially those in poverty, have problems accessing appropriate health services. A significant barrier appears to be lack of access to information about the appropriate health services needed.

Implications for Policy, Delivery or Practice: Results of this study point to the importance of targeted outreach to families in poverty who have children with special health care needs. This study will also provide a better understanding of the barriers experienced by low-income parents in providing care for their CSHCN and much needed information concerning private market and public policy success and failure in the delivery of specialized health services.

Primary Funding Source: Other, University of Missouri

• Immunization Status and WIC Services Among Children Below Poverty

Roopa Seshadri, Ph.D., Aida Pourbovali, B.S.

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Research Objective: We sought to determine whether utilization of federal programs for the underprivileged populations, specifically the Women, Infants and Children program (WIC), are associated with greater up-to-date (UTD) immunization status. Is underimmunization partly due to underutilization of services by those eligible?

Study Design: This was a retrospective longitudinal data analysis using the National Immunization Survey (NIS) conducted by the Centers for Disease Control and Prevention (CDC), covering years 1995 – 2001. Poverty status was determined using incomes reported in the NIS and national definitions of poverty, and the 4:3:1:3 immunization series UTD status was the outcome of interest. Weighted percentages of poverty and UTD status were computed. WIC participation by race and ethnic groups was obtained from the 2002 Executive Summary Report of WIC Services. Weighted
chi-square analyses were used to determine trends in WIC participation and UTD status by ethnic group.

**Population Studied:** The analyses included children with usable provider data who were at or below federal poverty standards.

**Principal Findings:** In general, WIC services are underutilized even amongst families for whom benefits would be the greatest. Utilization rates ranged from 27% - 38% for Hispanics, 35% - 40% for White-Americans, and 20% - 26% for African-Americans. From 1995 – 2001, as poverty levels among Hispanics increased, WIC participation increased and in parallel, the percentage of up-to-date immunizations also increased (range: 65% - 73%). This trend was less evident amongst the White-American children, but supported by the sample of African-American children. For African-American and White-American children, as poverty levels rose, utilization of WIC services decreased. While this was mirrored in decreasing UTD status among African-Americans (range: 68% - 72%), UTD status amongst White-Americans rose (range: 68% - 77%) in the same period.

**Conclusions:** Utilization of WIC services among children at or below poverty level appears to be directly associated with immunization status.

**Implications for Policy, Delivery or Practice:** Advantages of immunization coverage, citizenship and language. This vulnerability profile examines these disparities in health status and primary care access for children, and presents a vulnerability profile for children with severe asthma. Despite experiencing more hardships, children with severe asthma were more likely to have 1 or more ED visit at follow up (44% vs. 31%, p<.05) and tended to be more likely to be hospitalized (14% vs. 7%, p<.09). The percentage of uninsured children decreased from 21% to 14% (p<.05) and the percentage of children on Medicaid increased from 58% to 73% (p<.05) at follow up. Compared to those with mild/moderate asthma, children with severe asthma were more likely to experience insurance gaps during the follow up period, (43% vs. 27%, p<.01). Children with severe asthma were also more likely to experience at least 1 of several hardships (28% vs. 64%, p<.05), such as housing problems (41% vs. 29%, p=.06) or insufficient food (55% vs. 33%, p<.01). Despite experiencing more hardships, children with severe asthma were more likely to use housing, childcare or SSI benefits, and were less likely to get WIC benefits than children with less severe asthma.

**Conclusions:** Low-income children with severe asthma experience hardships, including insurance gaps. Although the percentage of uninsured children decreased during the study period, the sickest children experienced gaps in insurance coverage that likely undermine the quality and consistency of their health care. Benefit programs designed to minimize hardships for children and families are underused.

**Implications for Policy, Delivery or Practice:** Chronically ill children are likely to be particularly vulnerable to interruptions in health care and access to prescription medications resulting from insurance gaps. Clinicians and public program officials need to ensure that chronically ill children are enrolled in benefit programs available to serve them. In the post-welfare reform era, opportunities exist to improve the health of low-income chronically ill children by addressing their health insurance needs and other hardships experienced by their families.

**Primary Funding Source:** RWJF, Maternal and Child Health Bureau, Open Society Institute, Ford Foundation, Moriah Fund, Office of Population Affairs, US Dept. of Health and Human Services

**• Health Status and Primary Care Access Among California's Vulnerable Children**

Gregory D. Stevens, Ph.D., Ritesh Mistry, M.P.H., Michael Seid, Ph.D., Neal Halfon, M.D., M.P.H.

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**Research Objective:** Many children who are in low SES families have consistently poorer access to high quality primary care services, despite greater health needs. This study examines these disparities in health status and primary care access for children, and presents a vulnerability profile for each child that accounts for the combined effects of multiple predisposing and enabling risk factors based on: race/ethnicity, poverty status, parent education, insurance coverage, citizenship and language. This vulnerability profile

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**• Health and Benefit Experience of Low-Income Children with Asthma: A Longitudinal Cohort**


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**Research Objective:** Public health insurance and other benefit programs exist to serve low-income children, but the longitudinal experience of low-income chronically ill children in the post-welfare reform era has not been fully explored. Previously, we reported baseline data on health and insurance status of a cohort of predominantly low-income chronically ill children and their parents. Our study objective was to longitudinally assess health and public benefit status of a cohort of low-income chronically ill children.

**Study Design:** Longitudinal cohort of 498 families of chronically ill children. One year after enrollment, follow-up data were collected via telephone survey on health status and utilization, asthma severity (Rosier score dichotomized as severe vs. moderate/mild), health insurance, benefit use and household hardships. Surveys were conducted in English or Spanish by trained interviewers.

**Population Studied:** English or Spanish-speaking families of chronically ill children (78% with asthma), aged 2-12 years, previously enrolled at clinical sites and welfare offices in San Antonio, TX. Of the original cohort of 498 families, 79% (N=396) of respondents were contacted. Results are presented for subset with asthma (N=304).

**Principal Findings:** The rates of emergency department visits (59% vs. 35%, p<.001) and hospitalizations (23% vs. 9%, p<.001) decreased between baseline and follow up. Compared with those with mild/moderate asthma, children with severe asthma were more likely to have 1 or more ED visit at follow up (44% vs. 31%, p<.05) and tended to be more likely to be hospitalized (14% vs. 7%, p<.09). The percentage of uninsured children decreased from 21% to 14% (p<.05) and the percentage of children on Medicaid increased from 58% to 73% (p<.05) at follow up. Compared to those with mild/moderate asthma, children with severe asthma were more likely to experience insurance gaps during the follow up period, (43% vs. 27%, p<.01). Children with severe asthma were also more likely to experience at least 1 of several hardships (28% vs. 64%, p<.05), such as housing problems (41% vs. 29%, p=.06) or insufficient food (55% vs. 33%, p<.01). Despite experiencing more hardships, children with severe asthma were more likely to use housing, childcare or SSI benefits, and were less likely to get WIC benefits than children with less severe asthma.

**Conclusions:** Low-income children with severe asthma experience hardships, including insurance gaps. Although the percentage of uninsured children decreased during the study period, the sickest children experienced gaps in insurance coverage that likely undermine the quality and consistency of their health care. Benefit programs designed to minimize hardships for children and families are underused.

**Implications for Policy, Delivery or Practice:** Chronically ill children are likely to be particularly vulnerable to interruptions in health care and access to prescription medications resulting from insurance gaps. Clinicians and public program officials need to ensure that chronically ill children are enrolled in benefit programs available to serve them. In the post-welfare reform era, opportunities exist to improve the health of low-income chronically ill children by addressing their health insurance needs and other hardships experienced by their families.

**Primary Funding Source:** RWJF, Maternal and Child Health Bureau, Open Society Institute, Ford Foundation, Moriah Fund, Office of Population Affairs, US Dept. of Health and Human Services

**• Health Status and Primary Care Access Among California's Vulnerable Children**

Gregory D. Stevens, Ph.D., Ritesh Mistry, M.P.H., Michael Seid, Ph.D., Neal Halfon, M.D., M.P.H.
presents a more realistic image of child risk for poor health and inadequate primary care access, and allows for the detection of an additive or even multiplicative effects of these risk factors.

**Study Design:** Each risk factor is first examined independently in relation to child health status and primary care access. A vulnerability profile was constructed based on a count of six possible risk factors: 1) minority race/ethnicity, 2) family income less than 200% of the FPL, 3) parent education less than high school, 4) child uninsured, 5) non-citizen parent, and 6) primary language other than English among parents. Health status is measured with the standard five-point Likert-type scale, and primary care access is measured through having a regular source of care. Logistic regressions predicting these outcomes are presented using the vulnerability risk factors independently and then as the combined vulnerability profile. The analyses control for child age.

**Population Studied:** This study uses cross-sectional parent-reported data on 12,592 children ages 0-11 years of age in the 2001 California Health Interview Survey.

**Principal Findings:** Nearly 45% of children have three or more risk factors, with 16.9%, n=2,087 with three risks, 12.9%, n=1,623, with four risks, 9.8%, n=1,235 with five risks, and 5.3%, n=663 with six risk factors. Each risk factor was independently associated with child health status, and the vulnerability profile revealed a strong and more than additive association between each risk factor and child health. The relative risk of being in good, fair, or poor health compared to excellent/very good health increased for each additional risk: one risk RR 1.68, two risks RR 2.89, three risks RR 4.52, four risks RR 8.70, five risks RR 17.48, and six risks RR 29.39 compared to zero risks, all p<.001. After controlling for other risks, race/ethnicity was the only factor not statistically associated with primary care access. Accounting for this, lacking a regular source of care increased according to each risk: one risk RR 2.76, two risks RR 7.28, three risks RR 8.90, four risks RR 14.01, and five risks RR 39.50, compared to zero risks, all p<.001.

**Conclusions:** This study demonstrates that steep gradients in health status and primary care access exist according to the vulnerability profiles of children. The influence of the combined risk factors appears more than the sum of their parts, increasing child need for primary care services and simultaneously compounding the difficulties of obtaining primary care. The gradients found in this study are particularly important because they are evident in childhood, and threaten future health trajectories and outcomes.

**Implications for Policy, Delivery or Practice:** While California has made particular strides in improving health insurance coverage for children, many vulnerable children in poor health remain at-risk for inadequate access to needed primary care services. Understanding the constellation and interplay of risk factors that contribute to poor health and create barriers to primary care may help lead to more comprehensive policy solutions.

**Vulnerability and the Health Status and Developmental Risks of Young Children**

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**Research Objective:** Socioeconomic disparities in child health are well documented in the US. This study examines disparities in child health status and developmental risk for very young children according to a socioeconomic vulnerability profile for each child. The profile accounts for the combined influences of multiple SES risks (i.e. non-white race/ethnicity, low maternal education, and being uninsured) on health. Using a single profile of risks helps to understand the additive or, perhaps, multiplicative effects of these risk factors, and may inform more comprehensive solutions to disparities.

**Study Design:** The vulnerability profile encompasses three SES-related risk factors: non-white child race/ethnicity, less than high school maternal education, and child uninsurance. General health status was measured with the five-point Likert-type scale, i.e. poor to excellent. Risk for developmental problems is measured with a shortened Parents’ Evaluation of Developmental Status, PEDS, that assesses parent concerns regarding child development, and accurately identifies children at high risk of developmental delays. Logistic regressions predicting these outcomes are presented controlling for child gender and maternal mental health status.

**Population Studied:** This study uses parent-reported data on 2,068 children ages 4 to 35 months in the 2000 National Survey of Early Childhood Health, NSECCH.

**Principal Findings:** Child minority race/ethnicity, low maternal education, and being uninsured were independently associated with poorer health and higher risk of developmental problems. Lack of insurance was the strongest predictor of both outcomes OR=0.40, CI: 0.21-0.76 for being in excellent/very good health and OR=2.83, CI: 1.63-4.90 for high developmental risk. There was a combined additive association of the risk factors with both outcomes. Young children with one vulnerability had 0.36 lower odds of being in excellent or very good health status than children with zero vulnerabilities, p<.001. Children with two and three vulnerabilities were even less likely to be in excellent or very good health with odds ratios of 0.23 and 0.09 respectively, both p<.001. Similarly, the odds of being at high risk for developmental delays increased to 1.66 for children with one risk, 2.26 for those with two risks and 3.62 for those with three risks, all p<.001.

**Conclusions:** This study confirms that non-white race/ethnicity, low maternal education, and being uninsured are associated with poorer parent-reported child health status and higher developmental risk. Summarized as a vulnerability profile, these factors are additively predictive of child health and developmental risk. The gradients found in this study are particularly important because they are evident in the first few years of life, and threaten future health trajectories and outcomes.

**Implications for Policy, Delivery or Practice:** Previous research on children greatly improved knowledge of the...
determinants of health. It has also led, however, to narrowly-focused approaches to resolving disparities, since risk factors are often examined as if they exist in isolation from others. Understanding the profile and interplay of SES risk factors that contribute to poor child may help lead to more comprehensive policy solutions.

• Parents as Primary Communicators Between Primary and Specialty Care: What’s a Mother to Do?
Christopher J. Stille, M.D., M.P.H., William A. Primack, M.D., Ricardo C. Wasserman, M.D., M.P.H.

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Research Objective: To assess potential need for and comfort with parents as information conduits between primary care pediatricians (PCPs) and pediatric specialty physicians (SPs) in pediatric medical specialties serving primarily children with special health care needs.

Study Design: Prospective cohort study.

Population Studied: We enrolled 122 patients newly referred from general pediatricians in 22 practices to pediatric subspecialists in 5 specialties in a study of PCP-SP communication during 2002-2003. Parents, PCPs and SPs completed questionnaires by mail or phone at the first visit and 6 months later. Questions covered receipt of communication by PCPs and SPs and perceived responsibilities of parents as information conduits between PCPs and SPs. Physicians reported receipt of communication from other physicians, and all 3 groups reported whether parents actually functioned as primary communicators between PCPs and SPs, as well as comfort levels with parents in this role. We compared answers between the three groups using 2 tests, and concordance for individual patients using the kappa statistic.

Principal Findings: We received responses from SPs about 103 patients (84%), from PCPs about 82 patients (82%), and from 74 parents (61%). Only 54% of SPs reported receiving information from PCPs, while 96% of PCPs reported receiving information from SPs during the 6-month period. 41% of parents, 8% of PCPs and 16% of SPs reported that parents actually functioned as primary communicators between PCPs and SPs, as well as comfort levels with parents in this role. We compared answers between the three groups using 2 tests, and concordance for individual patients using the kappa statistic.

Principal Findings: We received responses from SPs about 103 patients (84%), from PCPs about 82 patients (82%), and from 74 parents (61%). Only 54% of SPs reported receiving information from PCPs, while 96% of PCPs reported receiving information from SPs during the 6-month period. 41% of parents, 8% of PCPs and 16% of SPs reported that parents were the primary means of PCP-SP communication (p<.0001). Of these parents, 70% felt comfortable with that role. Only 41% of all parents, 25% of PCPs and 36% of SPs felt comfortable with parents being primary communicators (p=0.08), and in the 52 individual cases where PCPs, SPs and parents all responded, in only one case was there agreement between all three respondents. There was no concordance (kappa=0.007 or less) between parent-PCP, parent-SP or PCP-SP pairs for comfort with parents as primary communicators.

Conclusions: Specialists frequently do not receive timely communication from PCPs before consultation visits. Parents frequently assume the role of primary communicator between PCPs and SPs, although many providers and parents feel uncomfortable with the arrangement. For individual cases, universal disagreement about this role prevails.

Implications for Policy, Delivery or Practice: Clarification of the parent role in PCP-SP communication is needed.

Primary Funding Source: RWJF

• Vaccination Status of Children Enrolled in Separate Child Health Insurance Plan (SCHIP)
Shannon Stokley, M.P.H.

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Research Objective: In a national sample of preschool children, determine: the characteristics of children enrolled in SCHIP; vaccination status of children enrolled in SCHIP compared to children enrolled in other insurance plans; and, the proportion of uninsured children eligible for SCHIP.

Study Design: We analyzed the July 2001 through December 2002 National Immunization Survey Health Insurance Topical Module (HIM). Insurance status (private, Medicaid, SCHIP, other, uninsured) was assessed at the time of the interview. Children who reported 2 insurance types were re-coded to the most appropriate insurance category based on logistic modeling techniques. Among uninsured children, SCHIP eligibility status was determined by comparing a child’s income to poverty ratio to state specific SCHIP eligibility criteria. Children were considered up-to-date (UTD) if they received 4 or more doses of diphtheria and tetanus toxoids and pertussis vaccine, 3 or more doses of polio vaccine, 1 or more dose of measles containing vaccine, 3 or more doses of Haemophilus influenzae type b vaccine, and 3 or more doses of hepatitis B vaccine (4:3:1:3:3).

Population Studied: Children aged 19 to 35 months, located in 36 states and the District of Columbia, who completed the HIM, and had provider verified vaccination histories (n=17,926).

Principal Findings: Among children 19-35 months of age, 5.5% were enrolled in SCHIP, 26.3% were enrolled in Medicaid, 57.3% were enrolled in a private insurance plan, 1.7% were enrolled in some ‘other’ type of insurance plan, and 9.2% were uninsured. Vaccination coverage levels (4:3:1:3:3) of children enrolled in SCHIP (75.5%) were not significantly different from children enrolled in private (76.3%), Medicaid (71.1%), or other insurance (74.3%) but were significantly higher than uninsured children (61.2%). After controlling for demographic characteristics, the odds of being 4:3:1:3:3 UTD among children who had continuous insurance coverage for the past 12 months were 1.37 times those for children who had an interruption in insurance coverage. Eighteen percent of uninsured children were eligible for SCHIP; demographic characteristics of SCHIP enrolled children were not significantly different from those of children eligible but not enrolled.

Conclusions: Vaccination coverage levels of children enrolled in the SCHIP program were not significantly different from children with other types of insurance. Disparities in vaccination coverage between insured and uninsured children continue to exist.

Implications for Policy, Delivery or Practice: SCHIP is an effective program for providing quality health care services to children. To ensure that all eligible children receive appropriate care, enrollment of uninsured eligible children and the retention of currently enrolled children during the re-enrollment process must be improved.

Primary Funding Source: CDC
• Mental Health Effects of HIV on Perinatally Infected Children

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Research Objective: Given the impact pediatric HIV has on the ecological functioning of children, the goals of this study are to examine:

1. the multiple factors that effect positive mental health outcomes for children who are HIV+ including mental health needs unique to HIV+ children, mental health needs and service usage of urban children and families, and school functioning of children with HIV
2. the patterns of mental health service engagement for children with HIV who have school failure and special education needs.

Study Design: This study is a secondary data analysis of a data set from the HIV Center for Clinical and Behavioral Studies at the New York State Psychiatric Institute. The original research study was supported by a comprehensive center grant from the National Institutes of Mental Health (P50-MH43520), a training grant from the National Institutes for Mental Health (T32-MH19139), and a pilot grant from the National Institute of Allergy and Infectious Diseases (P30 AI42848). The principal investigator on the study is Claude Ann Mellins, PhD.

Because the original study focused on strategies for HIV disclosure the majority of the variables in the study dealt with disclosure. The author of this paper was interested in mental health and educational services data and therefore elected to look at variables related to mental health service use and educational service use/outcomes. Descriptive analysis of each of the variables that fell into these categories revealed severely limited sample sizes. For example variables about school suspension revealed only 5 children (6.5%) had ever been suspended from school, 12 (15.6%) had school behavior problems, and 3 (4%) had ever taken psychotropic medications. When recoded into one variable for analysis, these numbers were further reduced. Therefore, the author chose to look at the following three variables: 1) Have you ever failed a grade in school (dichotomous)? 2) Have you ever received special education services (dichotomous)? 3) Have you ever seen a psychiatrist, psychologist, or social worker (dichotomous)? These variables were most conceptually relevant to the areas of educational need and mental health service use, while also providing adequate data for analysis.

Population Studied: The original study focused on patterns of HIV status disclosure in a sample of 77 perinatally HIV-infected children, ranging in age from 3 to 13 years. Research interview participants included the primary caregivers and all children who were at least 7 years of age. Children under the age of 7 were excluded from the interview process due to their developmental capacities. Parents of children under the age of seven were still interviewed. Families were recruited from at least five pediatric HIV clinics in Northern Manhattan, Incarnation Children’s Center (ICC) and Harlem Hospital’s Family Care Center (FCC) during 2000. Both clinics serve families from primarily low socio-economic ethnic minority communities.

Although children are seen from birth throughout adolescence, 75% are aged 6–13 years. Among the 77 HIV-infected children in this study, 54% were female, 65% were African American and 31% were Latino. Their mean age was 8 years (range 3–13 years). The majority of the children lived with caregivers who were HIV-negative or untested (71%), female (82%) and single parents (60%). Only 19 (25%) of the children lived with a birth parent, primarily mothers (n = 15). Fifty-eight (75%) of the children lived with an adoptive parent, 24 with relatives (n = 11 grandmothers, 7 aunts, 2 grandfathers, and 4 other relatives), and 34 with non-kin adoptive caregivers. All but two of the families were on public assistance. Only 20% of the caregivers had attended school beyond high school.

Principal Findings: Descriptive data on school functioning and receipt of mental health services is presented in Table 1. Among the 77 HIV-infected children in this study, 32% had been held back in school, 55.9% of the sample was receiving special education services, and 68.4% was receiving mental health services. Data analysis was conducted using SPSS 11.5 statistical software. Crosstabs were conducted to determine if there was a relationship between the dichotomous independent and moderating variables (school failure and receipt of special education services) and receipt of mental health services. No relationships between these variables could be established to the 0.05 level of significance. 69.7% of the children with school failure were not receiving special education services while 30.3% of the children with school failure were receiving special education services. Of the children who were receiving special education and had failed school 32% had received mental health services. Of the children who were receiving special education and had not failed school 68% had received mental health services. For children who were not receiving special education services, 52.9% of children who had not failed had received mental health services while 47.1% who had failed had received mental health care.

Conclusions: Even by this third decade of the HIV epidemic, HIV is still a highly stigmatized illness that is difficult to discuss. Over the past twenty-three years it has become clear that HIV is a family disease, pediatric HIV resembles other pediatric chronic illnesses, and pediatric HIV is predominately a disease of poor, black and Hispanic children from the inner city. Additionally, the literature in the area of urban kids mental health and HIV+ kids mental health of indicates that these children have profound mental health and educational needs. Additionally, children in special education are referred for mental health services 20% more than their mainstreamed counterparts. This study attempted to determine if special education served as a moderating influence between school failure and referral to mental health for a cohort of HIV+ children in New York City. While 38.3% of the children had failed at least one grade in school, 35.9% had received special education services, and 68.4% had received psychiatric services, there was no evidence that there was a relationship between educational need and receipt of mental health services at both the bivariate level.

There are two major reasons that children with HIV may not be receiving appropriate special education and mental health services. First these children are part of a school system in New York City so fraught with problems and failures the mayor had to take control of the school board. Therefore the
school system itself may be failing these children. Additionally, children with HIV live in families that necessarily are secretive to avoid stigma and discrimination. These families may be avoiding specialized services to maintain their level of secrecy.

**Implications for Policy, Delivery or Practice:** Future studies in this area should have larger sample sizes to ensure power and precision. Because this study would require 1400 subjects it may be necessary to draw samples from multiple cities, as there are only 2000 HIV+ children in New York City with HIV. Additionally it will be helpful to place the following areas on the research agenda of pediatric HIV: 1) Examination of the relationship between the age of decreased mental health functioning and HIV status 2) The development of areas for intervention with young HIV+ children to prevent them from drastic decomposition of mental health functioning 3) Determining if environmental characteristics have more of an effect on the development of mental health difficulties in adolescence as opposed to HIV status 4) Research about developmental and academic functioning should examine whether or not HIV+ children are inherently at risk for borderline intellectual and academic functioning as a side effect of chromic illness or if HIV+ children are at risk because they predominantly come from poor urban families with fewer resources.

**Primary Funding Source:** NIMH

- **Quality Transformation: Synergy in Healthcare Change**  
  Ann McAlearney, Sc.D., M.S., Sofia Veneris, M.H.A., Deena Chisolm, Ph.D., M.S.

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**Research Objective:** Creating an environment focused on quality requires a transformation of the way in which healthcare is delivered. Columbus Children's Hospital, Inc.--CCHI--has attempted this transformation by implementing a Computerized Physician Order Entry--CPOE--System that includes disease-specific order sets. The research objective of this project was to assess order set use and to identify factors impacting the use of three order sets: asthma, community-acquired pneumonia--CAP, and post-appendectomy.

**Study Design:** Eligible patients for each order set were identified from the CCHI Decision Support System. These patients were matched with data from the Eclipsys CPOE system to determine order set use. Order set use rates by month were calculated for each order set and significance of trends was tested using linear regression. Potential predictors of order set use studied included: stage of implementation, patient age, patient race, payor, admit day, admit time, emergency department--ED--admission, and length of stay. Relationships were tested using chi-squared analysis and multivariate logistic regression.

**Population Studied:** The study population includes patients admitted to CCHI between November 1, 2001 and November 30, 2003. The study included 529 asthma patients defined by a primary ICD-9 diagnosis code of 493.xx, excluding those admitted to the pediatric intensive care unit, 277 appendectomy patients defined by ICD-9 procedure codes of 47.09 or 47.01, and 210 CAP patients defined by a primary ICD-9 diagnostic code of 486.xx. Patients with cystic fibrosis were excluded from analysis because a CF-specific pneumonia order set is in place.

**Principal Findings:** No single pattern is seen in the uptake of this new technology. The asthma order set shows a linear trend of increasing use after implementation, but no such trend is seen in appendectomy or CAP. Order set use levels are also inconsistent. Six months after implementation, the asthma order set was used in 90 percent of admissions and the post-appendectomy order sets were used in 70 percent of admissions. Use of the CAP order set, however, did not reach 20 percent. Variables associated with order set use varied by set. Use of the asthma order set was associated with weekend admission, ED admission, older age and later stage of order set implementation. Use of the post-appendectomy order set was associated with ED admission and with longer stays. None of the studied predictors impacted use of the CAP order set.

**Conclusions:** There is no single pattern of uptake of order sets in the early implementation period. Predictors of use also vary by set.

**Implications for Policy, Delivery or Practice:** The goal of order set implementation is to reduce unnecessary practice variation while promoting best practices. This goal is best met when order sets are used consistently within their target populations. This evaluation shows that uptake trends in order set use vary by set as do predictors of use. Healthcare systems looking to implement computerized order sets must, therefore, consider the specific factors that may impact the use of each set rather than relying on a one-size-fits-all roll-out strategy.

- **Parental Awareness of Health and Community Resources Among Immigrant Families**  
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**Research Objective:** To examine the association between parental immigrant status and their awareness of health and community resources to help address common family problems.

**Study Design:** We studied data collected on a national probability of children to examine the relationship between parents' immigrant status (US-born citizens, naturalized citizens, and non-citizens) and their responses to questions about their awareness of specific health and community resources. The analyses consisted of bivariate and multivariate analyses controlling for respondent's age, educational level, race and ethnicity, employment stats, family income and child age. Wes Var 4.0, a statistical package designed for complex surveys, was used to analyze the data.

**Population Studied:** We used the 1999 National Survey of America’s Families, a survey of the health, economic, and social characteristics of children and adults. Analyses were conducted on data from 35,938 children. The sample is generalizable to all U.S. children.
Principal Findings: Compared to US-born citizens, non-citizens were at the highest risk of not being aware of health and community resources, followed by naturalized citizens. The services of which non-citizen were most likely to be unaware of were places to get help for family discord, child care issues, and family violence. Multivariate analyses indicate that other significant independent risk factors for lack of awareness were parental race/ethnicity, education level, employment status and child age.

Conclusions: Immigrant parents are at particularly high risk of alienation from systems of health care and support services that are available to low-income and other vulnerable populations in the United States.

Implications for Policy, Delivery or Practice: U.S. census data indicate that 20 percent of children live with a foreign-born householder in 2002. Our study documents the needs and vulnerabilities of this large community of children with immigrant parents. Community and health resources should reach out to immigrant populations with linguistically and culturally appropriate messages, to alert them to the availability of their services.

Primary Funding Source: HRSA