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Estimated Savings From Paid Telephone Consultations Between Subspecialists and Primary Care Physicians

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What's Known on This Subject

Little is known of the nature of telephone consults, the time required to provide them, or whether there is a positive economic impact for payers. They are highly valued by PCPs, but few reports attempt to quantify specific effects on care.

What This Study Adds

We quantified the levels of effort required for PSs to provide informal telephone consults, estimate considerable savings derived through avoidance of various types of care, and provide 2 independent validations of our main findings.

ABSTRACT

OBJECTIVES. Pediatric subspecialists are not routinely reimbursed by Medicaid or insurance payers for telephone consultations. Generally, access to pediatric subspecialists is limited because of the small number of providers, their concentration in academic medical centers, and increasing demand for their services. Little is known about the nature of such consults, the time required to provide them, or whether there is a positive economic impact for payers.

METHODS. Between March and October of 2007, pediatric subspecialists from 6 academic medical centers in North Carolina completed consultation reimbursement-request forms to prospectively track their telephone consultations with primary care physicians for the care of Medicaid patients <22 years of age. Data collected included the amount of time required per consult and consult outcomes in terms of service use and quality of care. Medicaid claims records and primary care physician surveys were used to validate the pediatric subspecialist consultation outcomes.

RESULTS. A total of 47 pediatric subspecialists provided 306 consults regarding the care of 292 Medicaid-insured children over the 8 study months. Telephone consults were generally <15 minutes in length and exceeded 30 minutes in <7% of calls. Pediatric subspecialists reported that telephone consults led to avoidance of specialist visits ($n = 98$), hospital transfers ($n = 35$), hospital admissions ($n = 14$), and emergency department visits ($n = 14$). Medicaid claims data supported these reports; matched primary care physician surveys suggested even higher levels of service avoidance. After adjusting for the reimbursed costs of providing telephone consults, an estimated \$477 274 was saved (\$39 per dollar spent).

CONCLUSIONS. Telephone consultations with pediatric subspecialists provide a valuable service to primary care physicians providing medical homes to Medicaid patients. Rewarding physicians for telephone consults seems to be cost-effective because of reduced use of costly services and reported improvements in quality of care. *Pediatrics* 2008;122:e1136–e1140

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Key Words

telephone consultations, curbside consults, pediatric subspecialty care, service avoidance, primary care

Abbreviations

PS—pediatric subspecialist
ID—infectious disease
PCP—primary care physician
ED—emergency department

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ACCCESS TO PEDIATRIC subspecialists (PS) is a serious problem throughout North Carolina and across the United States.¹ This is in large part attributable to the limited number of PSs relative to the child population and the increasing demands for PS care. For example, according to 2006 data from the American Board of Pediatrics, there are only 846 certified pediatric infectious diseases (ID) specialists under the age of 65 years, for a subspecialist/child population ratio of 1:74 330. In North Carolina there are only 23 ID subspecialists, and most are based in academic medical centers. Slightly fewer pediatric gastroenterologists have been certified, 837 nationwide, of whom only 12 practice in North Carolina, with a population of 2.03-million children (<18 years of age).²

This PS supply problem has been exacerbated by increasing demand for PS care. Studies have repeatedly shown that both the volume and complexity of pediatric subspecialty referrals have dramatically increased, largely as a result of increasing referrals from primary care physicians (PCPs), rising prevalence of chronic conditions, new treatments and technologies, and family preferences.³

One mechanism for addressing PS supply and demand problems is through telephone consultations, often referred to as “curbside” or “informal” consults. Telephone consultations are a common method for sharing information on

diagnosis and treatment between physicians^{4,5} and are highly valued, especially by PCPs.⁴⁻⁷ Although some attention has been paid to the costs of providing curbside consults (Christopher Grace, MD, written communication, 2007), there are few reports that attempt to quantify the specific effects of informal consults on care. Stille et al⁶ found that PCPs view curbside consults as a useful way of deciding which patients to refer to specialists. Rushakoff and Woeber,⁷ in their evaluation of endocrinology curbside consults, reported that all of the physicians found the service to be useful, and one third said that in-person consults had been avoided and that 55% of the consultations had caused them to alter the treatment of their patients. Estimates of the savings associated with alterations in care attributable to telephone consults are lacking.

We report here the results of a pilot program for reimbursing telephone consultations by PSs in 6 tertiary care facilities covering all of the regions of North Carolina. We summed reports of "avoided services" according to type and combined them with average payments for each service to generate estimates of total savings attributable to the telephone consultations. Subspecialist reports of avoided services were validated against time-matched data from Medicaid claims files and separate surveys of the PCP who initiated the consults.

METHODS

Program materials were developed with and promulgated through chairs of pediatrics and other physician champions at each medical center. Initially, these leaders decided to focus on requests for telephone consultations for a single specific pediatric subspecialty area (either infectious disease or gastroenterology) at each site. After 5 months of data collection, eligibility was opened to other pediatric subspecialties. PSs were offered a modest reimbursement (\$40) to provide the consultation and complete and return a simple reimbursement-request form that identified each Medicaid patient, the PCP requesting the consult, the PS providing the service, the "reason for the consult," the "time required" to provide the consult, and the "result of the call." Categories of time required were based on Current Procedural Terminology codes 99371, 99372, and 99373 for brief, intermediate, and complex calls equated, respectively, to <15 minutes, 15 to 30 minutes, and >30 minutes. Result of call responses included avoidance of a referral for a PS consult, an emergency department (ED) visit, a hospital admission, a hospital transfer, or some other outcome as detailed by the subspecialist. PSs were allowed to indicate >1 reason for the consult and that >1 service had been avoided by a single consult. Telephone consults with patients or parents were not included in the study, and PCPs were not reimbursed for initiating the consults.

After piloting and initial data collection at all of the centers statewide for 6 months, an additional outcome option ("improved quality of care") was added beginning in March 2007. Preliminary analyses showed a substantial number of forms listing this outcome. For this reason, the 158 forms submitted before March were excluded from the analysis. The data set for analysis

included all of the completed request forms for Medicaid patients from March to October 2007. Excel 2003 (Microsoft Corporation, Redmond, WA) and SAS 9.1 (SAS Institute, Inc, Cary, NC) were used to describe the results. Request forms missing the reason for consult, time required, or result of call were excluded from analysis. The few instances of multiple calls for a single patient were analyzed as separate consultations. The University of North Carolina Institutional Review Board approved this secondary analysis of data collected for quality improvement purposes.

Cost Estimation

To calculate savings attributable to the telephone consults, we first developed estimates of average costs for each type of service. Average payments by service were based on Medicaid reimbursements for services provided by the University of North Carolina Healthcare System in state fiscal year 2006. We assumed that all services received on a given day were part of the claim for whatever type of care (specialty care visit, ED visit, etc) was received on that day. For formal PS consults, we excluded all of the payments associated with hospitalizations and ED services, limited the claims to those with *Current Procedural Terminology* codes 99242 to 99245, and included all of the associated services. For hospital admissions, we aggregated all of the payments (including room and board, radiographs, laboratories, drugs, and physician inpatient services) for all of the surgical and medical discharges irrespective of diagnostic group and divided the total payments by the number of discharges for pediatric Medicaid clients. Hospital transfers were assigned the value of other hospitalizations. Claims indicating avoidance of both hospitalization and hospital transfers were credited with avoidance of only a hospitalization. Hospitalizations beginning in the first 7 days of life were excluded from the calculation of average hospital payments. For ED services we used a similar approach, again being careful to include payments for all of the associated services received by the patient on the date of the ED visit.

Validation

We examined Medicaid claims to verify that patients did not receive services in a window of time after the consult date appropriate for each type of service. Authors with clinical experience (Drs Wegner and Stiles) estimated appropriate time windows as 14 days for expedited outpatient visits and 2 days for ED visits, hospital admissions, and hospital transfers. To ensure completeness of the North Carolina Medicaid data files, we limited the claims validation to 190 consults between March 1 and June 30 (62% of total consults). Medicaid identification numbers were found for 125 consults (62%), and claims records were reviewed for the 60 unique patients for whom subspecialists reported service avoidance.

Validation surveys were mailed to PCPs for 200 (65%) of the 306 consultations. Surveys were not mailed in cases where we could not identify the physician requesting the consult, where the request came

TABLE 1 Reasons for Telephone Consultations Between PCPs and PSs, 2007

Reason PCP Sought Telephone Consult	Count	% of 306 Forms ^a
Medical management of a new problem	159	52.0
Medical management of an existing problem	117	38.2
Interpretation of test results	49	16.0
Coordination of care	38	12.4
Other reasons	13	4.3
Total	363	NA

NA indicates not applicable.

^a PSs could select >1 reason for each consultation.

from a hospital or an ED, or when special confidentiality issues were involved. For 11 patients with >1 consult, we only asked PCPs to describe the outcome from the first consult. The PCP survey identified the patient and date of the consult and, without indicating how the subspecialist had described the outcome of the consult, asked the PCP to indicate what services listed on the PS reimbursement form had been avoided.

RESULTS

During the 8-month study period, 47 PSs submitted 306 consult forms associated with the care of 292 pediatric Medicaid patients. The number of reimbursement-request forms from the 6 participating medical centers ranged from 12 to 87. Patient ages ranged from <1.0 to 21.0 years, with a mean of 4.3 years and a median of 2.0 years.

The most common reason for telephone consultations initiated by PCPs was for advice regarding management of new or existing problems (Table 1). PCPs requested telephone advice for interpretation of test results and coordination of care far less often. The average time required to complete a telephone consultation was <30 minutes in 94% of consults and <15 minutes in 62% of consults (Table 2).

Over the 306 telephone consults, improved quality of care was most often reported as an outcome (53%), followed by avoidance of PS visits (32%), hospital transfers (11%), hospital admissions (5%), and ED visits (5%; Fig 1). Less than 3% of forms indicated avoidance of >1 service.

Among patients in the Medicaid claims analysis, 60 (48%) had ≥ 1 service described as avoided by a PS, with a total of 64 avoided services. After review of all of the available Medicaid claims records, we found only 1 outpatient visit within the 2-week window for "patients avoided visits" and no evidence of claims for ambulance

services with avoided hospital transfers. We also found no claims for the "avoided hospitalizations" or the "avoided ED visits."

PCP validation surveys were received for 130 (65%) of the 200 PCPs originally mailed surveys. The distributions of patient ages and avoided services reported by PSs in this subset were no different from those seen across all of the PS forms. At the group level, PSs reported 74 avoided services, whereas PCPs reported 141 avoided services, almost twice as many. PCPs reported higher numbers than PSs for all of the categories of avoided services (Fig 2). When results were compared at the individual consult level, patient-matched PCP data suggested no avoidance of services when PSs reported such avoidance for 19 (27%) of 70 consults.

Average Medicaid payments for services from University of North Carolina Health Care System in 2006 were \$591 for subspecialist visits, \$722 for ED visits, and \$8352 for hospitalizations. When average costs for each of the services were assigned to the 98 specialist visits, 35 hospital transfers, 14 hospitalizations, and 14 ED visits avoided, we estimated that a total of \$477 254 was saved because of the consultations (mean savings per consult: \$1520). After reducing the estimated savings by the cost of providing the 306 consults (\$12 240), we found that, for each dollar spent on consults, an estimated \$39 was saved.

DISCUSSION

Telephone consults are a common method for sharing information on diagnosis and treatment between physicians.^{4,5} Although the informal and indirect nature of these consults leads to concerns regarding accuracy of recommendations^{8,9} and potential liability for those providing such consults,¹⁰ their perceived value, especially by PCPs, suggests that they will remain a necessary part of routine medical care.⁴⁻⁷

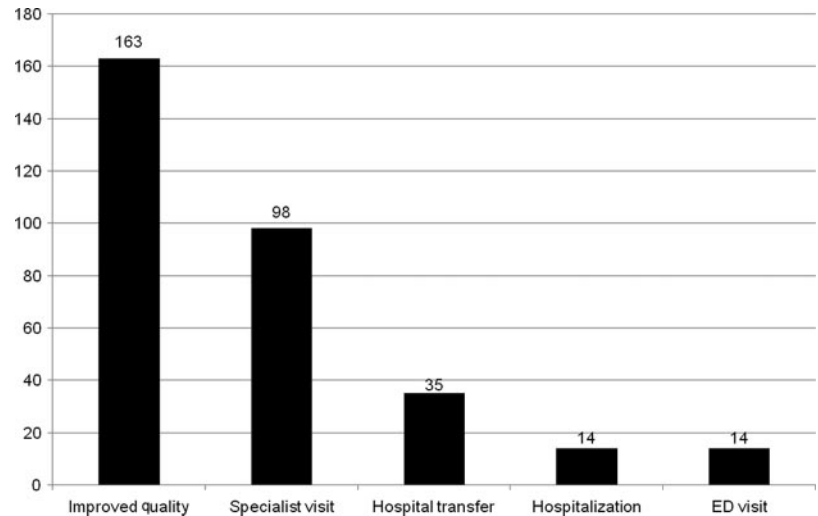
The informal telephone consults reported here share similarities with those described by other authors. The most common reasons for seeking them (help with management of new or existing problems or the interpretation of test results) are similar to the reasons described by other authors using different study approaches.¹¹⁻¹³ Likewise, the time to provide consults tended to be short (Table 2), consistent with previous reports from pediatric ID clinics in Colorado and South Dakota.^{11,14}

Unlike other reports to date,^{6,7} this study examines the results of consults from multiple perspectives. Validation of outcomes using Medicaid claims offered an independent and objective source for actual expenditures for care for the consult patients. Patient-matched surveys of the PCPs originating the telephone consultation were especially compelling, because the PCPs were dealing directly with the patients who did or did not subsequently seek care in other venues. Furthermore, PCPs would have had less incentive to overestimate the outcomes of the consults than the PSs who might have an interest in favorably reporting subsequent use of services. Surprisingly, our PCP survey data showed that the PSs may have underestimated the service avoidance that comes from telephone consultation. Our data further show "improvement of the quality of care" for

TABLE 2 Time Required to Provide Telephone Consultations Between PCPs and PSs, 2007

Category of Complexity and Time	Count	%
Brief call (<15 min)	190	62.1
Intermediate call (15-30 min)	96	31.4
Complex call (>30 min)	20	6.5
Total	306	100.0

FIGURE 1
Frequency of improved quality of care and avoided medical services resulting from 306 telephone consultations, 2007.



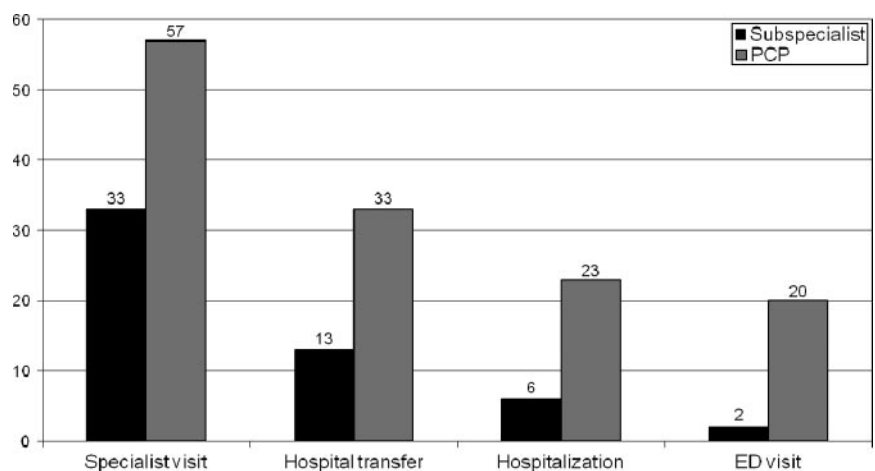
Medicaid patients, a subjective measure, noted on a majority of the request forms received from PSs.

This study may be seen as a response to the call in Jewett et al¹ for studies to document cost-effectiveness and improvements in quality and access to care provided by telephone consultations. Although our method of asking the subspecialists to describe the effects of informal consults was less direct than asking the requesting physicians, as did Rushakoff and Woeber,⁷ the level of avoided formal consultations reported by PSs in our study (38%) is very close to the 33% that their PCPs reported. Similarly, their PCPs reported altering their care after 55% of their consultations with endocrinologists, whereas we found that 49% of consults with infectious disease and gastroenterology subspecialists resulted in the avoidance of 1 or more services. Therefore, we believe that the economic benefits associated with the consultations with PSs in our study may reflect the outcomes of those provided by a broader range of adult and PSs. Based on the report of Rushakoff and Woeber,⁷ the cost savings that we describe for PSs may be similar to adult subspecialists, but additional studies in other subspecialties are needed to verify this assumption and quantify those savings.

There are several limitations in our methods. Although we worked with all 6 of the major medical centers in the state, for reasons of feasibility, we primarily focused our program in 2 pediatric subspecialties. More importantly, we did not collect baseline data on rates of telephone consultation nor did we randomize PCP practices, subspecialty clinics, or subspecialists to participate or not in the program. Therefore, we cannot say whether paying subspecialists to take calls increases the frequency with which they do so or whether informal consultations with subspecialists paid to provide the calls result in the avoidance of a greater number of services. We cannot know with certainty whether the patients had a high likelihood of seeking the care that the subspecialists said was avoided, although the PCP validation data offer strong subjective evidence that care in some other venue would indeed have been sought in most cases. Finally, our cost estimates are based on Medicaid payments for services, so the savings realized by private insurers for similar avoided services would in all likelihood be greater.

PCPs should also be paid for time spent on telephone consultation with subspecialists. In North Carolina Medic-

FIGURE 2
Frequency of avoided medical services described as resulting from telephone consultations by subspecialists ($n = 74$) and PCPs ($n = 141$) in a matched validation subset of 130 consults, 2007.



aid, PCPs are paid \$2.50 per member per month in their practice to offset expenses of care for this population. In addition, PCPs are encouraged to make consultation calls on the day of the patient visit and use this in the evaluation and management code determination. Both improve reimbursement to the PCPs. Data collection for this study used evaluation and management codes 99371, 99372, and 99373, respectively, for brief, intermediate, and complex telephone calls with patients or providers. These codes were dropped in January of 2008 and replaced by codes 99441, 99442, and 99443, which are more narrowly defined for telephone evaluation and management services provided to established patients or their parents or guardians only. However, plans can use codes as they choose to categorize consultations either between providers and patients or between providers.

At the national level, to prevent the looming collapse of the primary care system for adults, a new reimbursement system has been proposed by major employers and major medical societies.^{15,16} It will pay PCPs for the time spent to coordinate care, but it does not include payments for subspecialists. It seems reasonable to reimburse PSs for telephone consults as a supplemental revenue source, because the Resource-Based Relative Value Scale is low for the amount of time and effort required in the care of complex pediatric patients.¹⁷

CONCLUSIONS

The findings reported here on telephone consultations with PSs suggest that this approach to care reduces costs for Medicaid patient care. The use of subspecialist payments may encourage subspecialists to provide more consultation in this format instead of requesting transfer of patients for admission or outpatient consultations. Telephone consultation also provides a means to improve communication and comanagement of patients, especially in access-constrained areas for PSs.¹⁸ The savings to patients and families of avoiding unneeded services are likely to be huge, especially when one factors in the costs of gas and travel, the time parents must take off from work, and other costs when parents travel great distances for subspecialty care. In the US health care system, where current rates of increase in costs are unsustainable, finding ways to contain costs of care for the patients, as well as the providers and insurers, will provide great benefit to the overall system.

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