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Methodological Challenges Collecting Parent Phone-Call Healthcare Utilization Data

Paula Moreau, RN., MSN, PhD Candidate^a, Sybil Crawford, PhD^b, and Susan Sullivan-Bolyai, DNSc, CNS, RN, FAAN^c

Sybil Crawford: Sybil.Crawford@umassmed.edu; Susan Sullivan-Bolyai: ssb7@NYU.edu

^aUniversity of Massachusetts, Worcester

^bUniversity of Massachusetts, Worcester

^cNYU College of Nursing April, 25, 2015

Abstract

Recommendations by the National Institute of Nursing Research and other groups have strongly encouraged nurses to pay greater attention to cost-effectiveness analysis when conducting research. Given the increasing prominence of translational science and comparative effective research, cost-effective analysis has become a basic tool in determining intervention value in research. Tracking phone-call communication (number of calls and context) with cross-checks between parents and healthcare providers is an example of this type of healthcare utilization data collection. This article identifies some methodological challenges that have emerged in the process of collecting this type of data in a randomized controlled trial: Parent education Through Simulation-Diabetes (PETS-D). We also describe ways in which those challenges have been addressed with comparison data results, and make recommendations for future research.

Keywords

clinical research; cost-effective analysis; diabetes; healthcare utilization data; methodological challenges; pediatrics; randomized controlled trial; smartphone applications

Given the need for greater cost containment throughout all areas of the healthcare environment, translational science and comparative effectiveness research are gaining greater prominence as a critical approach to determining intervention value (Sullivan & Goldman, 2011). Accordingly, a growing number of clinical trials include economic endpoints to demonstrate an intervention's potential for cost effectiveness along with its clinical effectiveness (Bingham, 2009; Frick & Stone, 2009; Owens, Qaseem, Chou & Shekelle, 2011; Stone, Lee, Giannini & Bakken, 2005). In response to the recommendations by the National Institute of Nursing Research and other groups encouraging researchers to

Corresponding author: Paula.Moreau@umassmed.edu.

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pay greater attention to cost-effectiveness analysis (Frick & Stone, 2009; Stone, et al., 2005), nursing researchers are increasingly addressing the significance of costs and cost consequences of interventional research designed to improve care (Bensink, et al., 2013)

Healthcare utilization data (HCUD) is an important component of cost-effective analysis. HCUD expressed as outcome measures of patient resources consumed, can be used to determine whether a treatment or intervention is cost effective as well as clinically effective (Owens, et al., 2011). The measurement of healthcare utilization variables can present a number of methodological challenges. Numerous factors can influence utilization, and many unanticipated issues can arise in the process of identifying and collecting pertinent data (Anderson & Newman, 2005; Bhandari & Wagner, 2006).

This article identifies some methodological challenges that emerged in collecting HCUD in one randomized controlled trial (RCT): Parent Education Through Simulation-Diabetes (PETS-D), and discusses ways in which those challenges have been addressed and measured. We begin with a brief review of the literature to help explicate the importance of using HCUD in research, and to identify associated considerations when collecting this type of data.

Healthcare Utilization and Its Contribution to Clinical Outcomes

Healthcare utilization can refer to a range of healthcare uses and expenditures, but it frequently refers to patient utilization of the following four categories of services: (a) ambulatory care, including visits and telephone calls to a healthcare provider (HCP) in an office or outpatient setting; (b) inpatient care (number of hospital admissions and length of hospital stay); (c) emergency department visits; and (d) adherence to prescription medications received (Davis, 2011). The extent to which a particular group utilizes such services can provide important indicators about the appropriateness of resources accessed and whether they are being underutilized or overutilized (Anderson & Newman, 2005). Such data are critical in performing a cost analysis of current technologies and treatments and may provide important indications for policy and future research (Davis, 2011; Janicke & Finney, 2003; Newacheck & Kim, 2005).

Implications for Research

HCUD can be used in research studies as an important variable to determine efficacy and comparative cost effectiveness or cost consequences of an intervention. For example, Wagner, et al., (2001), in a retrospective cohort study that examined HCUD adjusted for demographic and healthcare characteristics, demonstrated that a sustained reduction in HbA_{1c} levels of adults with diabetes represented a significant cost savings for health maintenance. In some studies, healthcare utilization can be the primary variable of interest in determining whether an intervention is effective at reducing unnecessary healthcare expenditures.

White-Traute (2013) was able to demonstrate in a prospective randomized controlled study that certain developmental interventions for mothers and their premature infants (the H-HOPE intervention) resulted in decreased levels of healthcare utilization. Infants receiving

the H-HOPE intervention had significantly fewer acute care visits for illness and slightly less overall healthcare utilization, resulting in reduced cost of preterm infant care. Although the data were limited by the fact that only maternal self-report of infant HCUD were collected, there was also evidence to suggest that the intervention may have resulted in (a) enhanced infant growth and development leading to decreased illness and (b) increased mothers' confidence and understanding of preterm infant behaviors, in effect reducing "anxiety related" visits.

Although institutional cost savings such as those presented in the studies above are an important variable of interest, an accounting of other costs or cost consequences could be equally valuable to assess (Stone, et al., 2005). For example, a comparison of economic consequences of one intervention over another that incorporates variables such as the extent of lost earnings of patients or parents who are unable to work as a result of healthcare activity could yield important information. Similarly, a comparison of direct and indirect costs of other important correlatives such as depression, patient or parental anxiety, and psychosocial adjustment would be beneficial in order to evaluate more rigorously the comparative economic benefits of an intervention that extend beyond immediate healthcare costs (Stone, et al., 2005).

Thus, broadening the economic analysis of healthcare research to involve complex appraisals of factors beyond simple cost-savings is critically important. The appropriateness of outcomes and resources to evaluate will vary depending on the questions being asked and the perspective of the analysis (Frick & Stone, 2009; Stone, et al., 2005). A hospital administrator, for example, may be interested in direct medical costs and resources consumed as a result of an intervention, whereas patient care providers might also be interested in a comparison of direct nonmedical costs, such as a reduction in transportation costs or childcare costs to patients and families (Stone, et al., 2005). Others might be more concerned with the complexity of metrics that incorporate prolonged years of life or adjustments for improved quality of life when evaluating or comparing different interventions (Frick & Stone, 2009; Stone, et al., 2005).

An increasing number of nationwide databases have become available, which enable secondary analyses of a wide range of health issues including cost, health provider practice patterns, and access to healthcare programs (Bernstein, et al., 2003). In addition, secondary data analysis of HCUD can yield significant findings that can positively or negatively affect the direction of future studies. For instance, a utilization study by Raphael, Zang, Liu & Giardino (2010) used national children's health data to investigate the relationship between high parenting stress and healthcare utilization, finding a significant correlation between increases in parenting stress and the frequency of emergency care visits. Even controlling for psychosocial and sociodemographic variables, they determined that parents with high parenting stress were more likely (adjusted odds ratio, 1.24; 95% confidence interval 1.10–1.41) to seek emergency care for their children compared to parents with low parenting stress. These findings led the authors to consider whether interventions aimed specifically at reducing parental stress might help to decrease the frequency of unnecessary emergency care visits.

General Consideration About HCUD Collection

Collection of accurate HCUD is a complex process that involves consideration of a range of methodological challenges (Anderson & Newman, 2005; Bhandari & Wagner, 2006). Although chart audits are considered the “gold standard” for retrieval of HCUD (Killeen, Brady, Gold, Tyson & Simpson, 2004; Ritter, et al., 2001), they can be time-consuming and costly, and may not always provide the most accurate information (Bhandari & Wagner, 2006; Killeen, et al., 2004; Ritter, et al., 2001). In a comparison study of patient self-report with medical utilization frequency, Ritter, et al. described a tendency for provider records to contain missing data in some cases and speculated that this was likely related to the fact that there may have been unrecorded visits—especially visits outside of the health maintenance organization.

In an attempt to capture HCUD that may not be recorded in the medical records, researchers have increasingly employed patient or family self-report methods of data collection to cross-check services utilized. However, there are reliability and validity challenges with this type of data collection as well. Several authors have discovered tendencies for patients to either underreport or overreport utilization of healthcare services (Bhandari & Wagner, 2006; Killeen, et al., 2004; Ritter, et al., 2001). Bhandari and Wagner (2006) conducted a comprehensive review of articles on the accuracy of self-report data. The review reveals that patient self-reports can be influenced by a number of variables including (a) the patient’s cognitive ability, (b) the recall time frame (underreporting increases the longer the time between visit and reporting), (c) and/or frequency of visits (participants tend to forget visits as the number of visits increases).

Bhandari and Wagner also found that the type of visit could influence either overreporting or underreporting, observing that participants tended to underreport visits that were perceived to be embarrassing or stigmatizing. For example, they found a tendency to underreport visits related to issues of mental health or alcoholism. However, the authors recognized that some studies have also shown overreporting of such visits, and speculated that some visits may be perceived by patients to be more significant and thus more likely to stand out in their memory, even to the point of affecting the accuracy of reporting.

Questionnaire design has been found to be instrumental in determining the accuracy of patient self-reporting, affecting comprehension, the motivation to answer, and even the timing of the report. Use of reminders, or “ticklers,” also has been found to be helpful in self-reporting healthcare utilization (Bhandari & Wagner, 2006). The Internet is increasingly being used as a means of patient self-report, with good effect (Bhandari & Wagner, 2006). Because systematic errors can occur in both self-report data and provider documentation, a dual source of data collection is likely to yield more robust and accurate data than a single source (Jordan, Kinks & Croft, 2006; Killeen, et al., 2004).

Specific Methodological Challenges With Analysis of Parent Call Data

Analysis of parent call data to pediatric providers has been shown to be an important indicator of healthcare utilization, as it can identify potential cost savings not otherwise considered in healthcare utilization studies (Jordan et. al, 2006; Leibowitz, Day & Dunt,

2003). In one prospective survey (Bunik, et al., 2007), for instance, parent calls to a pediatric after-hours call center in Denver, CO (N = 8,980), 46% (n = 4,130) of the total number of parents responding reported that they considered their calls to be urgent and would have sought emergency care had they not reached a HCP by phone. However, only 13.5% (n = 558) of those calls were deemed to be urgent by the HCP who received the call. Conversely, among the number of parents who reported they intended to keep their children at home (n = 1,886), 15% (n = 283) of those cases were deemed by the HCP to be urgent and referred to the emergency department (ED). Thus, the authors were able to identify a significant net cost savings to the healthcare institution based on the utilization analysis of these calls. The calls also provided a significant measure of how families were managing children's conditions, what further teaching might be required, and could serve as a measure to foreshadow other important health utilization outcomes.

PETS-D and Healthcare Utilization and Challenges

Following is a description of our study and the specific problems that emerged when we began collecting HCUD: PETS-D is an RCT multisite study using high fidelity human patient simulation (HPS) to teach parents diabetes management for their children who have been recently diagnosed with Type 1 diabetes (T1D). HPS provides parents visual formation and reciprocity of "hands-on" care (three teaching sessions over the course of 12 weeks post diagnosis), compared to those parents who receive standard diabetes education (Sullivan-Bolyai, Bova, Lee & Johnson., 2012). Primary variables of interest included quantitative measures testing parent knowledge of diabetes management, self-efficacy, and anxiety. In-depth qualitative interviews were also conducted to explore and compare parent's educational experiences as well as the healthcare educator's experiences in both study arms.

Parent Phone-Call Communication in PETS

The study also included a number of *secondary exploratory aims* because little is known about the potential effects of parent education using HPS. One of these secondary aims specifically associated with the collection of HCUD was to explore if HPS visual parent education had an effect on outcomes such as frequency of emergency visits and/or additional clinic visits. For the purposes of this article, we also measured the number, type, quality, and appropriateness of parent calls made to the HCP over the course of the first 6 months after diagnosis in both study arms to explore the nature and extent of any differences.

During the grant development phase, the PETS-D team brainstormed what type of HCUD might suggest subtle changes or differences in the quality of clinical outcomes between the experimental and control arms. Based on our framework, the team postulated that we might see differences in the frequency, type, and quality of parent calls in the experimental group based on the level of diabetes knowledge acquisition. The intervention applies Leventhal's self-regulation theory, interpreted by Johnson (Johnson & Leventhal, 1974). Teaching parents with HPS provides them diabetes management education enhanced by three senses—touch, visualization, and hearing. These visceral experiences allow parents a better understanding and the ability to assimilate important diabetes knowledge for managing their children's chronic condition. It also allows them to respond with visual schemata a pattern

of how to respond when called upon and better control of heightened emotional response when situations occur (Johnson, 1999).

Through use of this schema, the parent (or patient) is predicted to experience less anxiety and greater confidence in the control and regulation of their responses in the management of their child's actual condition (Melnik, Crean, Feinstein, Fairbanks & Alpert-Gillis, 2007). By this logic, parent calls to providers in the experimental arm could be more focused. Indeed, because of increased confidence, parents might feel the need to call less frequently. Accordingly, our primary premise was that data gathered from phone calls could be analyzed to identify signs that the parents are demonstrating more effective management of their child's diabetes in their attempts to reach a desired medical outcome.

To test the primary premise, we collected two types of data to cross-check parent/HCP communication between teaching sessions in order to capture documentation of parent calls to the HCPs from the perspective of both the parent and the HCP (see Figures 1 and 2). We had hoped to be able to descriptively analyze this data in terms of the following: (a) to determine the frequency and appropriateness of the calls, and (b) to determine whether there are discernible differences between the two groups in terms of three variables: the ability of the family to self-manage the condition of the child; the content and duration of calls made to the HCP; and the response-appropriateness of the call as determined by the HCP. For example, a response-appropriate call would be one where an insulin dose change is needed or a child is exhibiting unusual behavior. A less appropriate call might be one that is made to renew a prescription in the middle of the night rather than waiting until business hours. It was hoped that this utilization data would substantiate the need for further parent education, support and/or encouragement, as well as provide ancillary benefit of cost savings for the healthcare facility from the perspective of time and case management.

PETS-D Method of Collecting Healthcare Utilization Data

Two relatively straightforward and simple-to-complete logs were developed to capture the two methods of documenting parent calls: HCP Documentation of Parent Calls (Figure 1) and Parent Call Log (Figure 2). The design, wording, and plans for implementation of the logs were made in consultation with the study nurses, co-investigators, and parent consultants with the goal of simplifying the wording and facilitating the process both for HCP and parent participants. The intended directness and simplicity were designed to reduce respondent burden and other impediments that might adversely affect motivation to complete the logs. After consultation with providers, for example, logs were designed to fit into a lab coat pocket for easy access and portability. They were also designed in a pad form with gum binding at the top to make it easy to remove them for filing when completed.

Challenges That Emerged With the Collection of Parent Phone-Call Communication

For the purpose of quality assurance, a review of the rate of the HCP and parent logs was conducted from the inception of the study and continued over 4 separate time intervals were analyzed by obtaining the rate of calls reported for each group (parent and HCP reports) based on the average number of calls made per 100 participant days (see Graph 1).

To account for the different number of subjects recruited during the different intervals and the varying length of some of the intervals, participant days was calculated by determining the date a subject had been in the study in months from the recruitment date. If a subject's participant time crossed a study interval, the time the subject contributed to each interval was calculated. The total number of days for all participant time within an interval was then summed across subjects. To obtain the rate of calls, the number of calls for each interval was divided by the number of participant days within that interval and multiplied by 100.

Data analyzed during the first period (November 10, 2010 to December 31, 2011) suggested uneven rate of returns in parent logs as compared with return of HCP documentation of parent calls. The return rate of parent call logs was 0.44 per 100 participant days during interval one, while the rate of HCP documentation was 1.33 per 100 participant days. It was not possible to determine the quality and context for parent calls made during this period because of the uneven returns from both HCP and parents, and the fact that chart audits were not part of the study protocol. However the comparative distribution and rate of calls for parent and HCP groups suggested that many of the calls parents were making to the HCPs were not being captured (see Graph 1).

Strategies for Improving Completion of Phone-Call Communication

Numerous meetings among study personnel at both sites were held to explore improved strategies for addressing problems of completion and retrieval of this important HCUD. The principal investigator (PI) and co-investigators at each site met to reiterate the importance of collecting utilization data, and to explore methods for ensuring completion as well as the accuracy and timeliness of the data. A graduate student (primary author) was enlisted to visit each site and investigate the motivation and understanding of the staff in an attempt to identify some of the problems that were affecting phone-call communication returns. Monthly meetings with the PI, study nurses, trial coordinator, and research assistants were held to brainstorm solutions.

Improvement of Parent Log Returns

After conducting a review meeting, a significant change was identified and implemented. A study nurse suggested that e-mail reminders to parents might help improve return of the phone-call communication forms. Shortly after the recommendation, a procedural change was approved by the institutional review board (IRB), and research assistants at both sites began sending parents e-mail reminders every 2 weeks. Parents responded favorably to the reminders, and reported in follow-up discussions that they found the frequency of every two weeks to be helpful and found it easier to respond to e-mail than phone call or postal mail reminders. A quality assurance audit over the 6 months revealed an increase in returns of parent call-in logs from the rate of 0.44 per 100 participant days in the first period analyzed (November 10, 2010 to December 31, 2011) to 0.85 per 100 participant days in the next 6-month period (January 1 to June 30, 2012). The increase in rate of parent logs during the second period and the positive feedback from parents about the reminders suggested that the parent reminders might be a simple and effective solution to improving parent log returns.

However, during the next 6-month period (July 1 to December 31, 2012), there was a sharp decline in the rate of parent call logs. During this period the rate of parent calls declined from 0.85 in the previous 6-month period to 0.35 in the next. In the last 6-month period (January 1 to June 30, 2013), there was an increase to a rate to 0.70, suggesting that there were variables affecting the rate of log returns that were not being captured directly in a count of the logs.

Although there was a clear uptick in the number of parent logs in the second period suggesting that our strategy of parent reminders was helpful, we had no information at this point in the study about the *context* of those calls—appropriateness and reason for calls—which might help to explain the decline in the rate of parent call logs in the next period between July 1 and December 31, 2012. Without the ability to fully compare and analyze the logs for such variables and the ability to cross-check the logs with what had been documented in patient charts, it was impossible to fully determine whether the decline in the rate of parent calls logs was due to a lapse in parent reporting, or some other variable such as less anxiousness experienced by the parents and therefore less need to make calls to the HCPs between visits.

Improvement of HCP Documentation

Finding solutions to the problem of HCP log returns proved to be more complex. Through our meetings and discussions, it became apparent that some HCPs—mostly those who were not part of the study (but all of whom had been extensively oriented to the study)—were not always following through and completing and/or not submitting the healthcare provider-parent phone communication forms. Other problems noted included some data inaccuracies and lack of timeliness in data recording. Discussions with research assistants from both sites revealed that one site had been following up more frequently with reminders to the parents, and therefore was obtaining better return of phone call logs. Six-month follow-up from the first period analyzed suggests that the HCP rate and parent call documentation both declined in each successive 6-month period (see Graph 1), suggesting that HCPs were not reliably capturing the calls made.

After further discussions and meetings among the PI, co-investigators, and other study personnel, a strategy for improvement was implemented. One of the problems identified was that parent calls frequently came at busy times, and the providers had difficulty determining which calls were coming from study participants. A recommendation was made by a study nurse to place a list of study participants near the phone in a locked office space so calls could be easily cross-checked when phone calls came in. With approval from IRB for this procedural change, the plan was implemented. Study nurses reported that this change seemed to help nurses in particular, as the presence of the list acted as a reminder to fill out the forms. However, the effect of this strategy was not reflected in the rate of call documentation over the next successive periods.

Summary and Lessons Learned

Even though parent phone-call communication represents only one component of the HCUD, it is potentially a significant source of data. Maintaining fidelity of data retrieval in

just this one domain has taken careful planning, flexibility, and collaboration with members of the research team, requiring patience, persistence, and sensitivity to obtain improved results. Although we were able to realize some improvements with parent and HCP log returns, the “fixes” in our study have not been permanent and as a result, we were unable to reliably analyze the data collected for these secondary variables of interest.

We have learned that with a large multisite study taking place at busy clinics, there are many demands on both the clinicians and the study participants. Even with buy-in from clinical staff right from the grant-planning phase, it is easy for HCPs and participants to lose sight of the importance of data return without frequent reminders. Maintaining the integrity of data collection requires a constant process of reassessment and careful adherence to ongoing quality audits, regular meetings, and discussions to problem-solve issues as they continue to appear (Sullivan-Bolyai, et al., 2007). In a broader sense, improved outcomes are rarely the result of a single strategy, but more typically are the product of synergistic attempts by different members of the research team at solving problems as they emerge.

There are many factors that can influence the quality and return of HCUD—some complex and some unanticipated. We recognized early on the paramount importance of a simple accurate measure of data collection, and addressed components that needed modification as soon as they were identified, including phone-call-communication-form design, time of recall, the type and amount of utilization data to be collected, and types of memory aids. Discussions with a range of HCPs and study participants yielded a better understanding of where and under what circumstances they were filling out call-in data, thus assisting us in the development of proactive recommendations for improvement.

One of the greatest challenges we encountered was in obtaining the phone-call forms from the clinicians who were not part of the study, and who tended not to see this detail as part of the job. HCP work burden is always a consideration in clinical research and becomes a critical parameter when comprehensive outcome measures are desired. Soliciting the assistance of busy clinicians who are not compensated by the study takes tact and careful planning. Even clinicians who are being compensated may find that their research responsibilities end up at the bottom of their “to-do” list without thoughtful reminders (Sullivan-Bolyai, et al., 2007). In these situations, it was indispensable to enlist the assistance of the co-investigators at each site for adequate support and follow-up with staff.

Future Directions

Nighttime and weekend calls can be a stressful aspect of pediatric practice (Poole, Schmitt, Carruth, Peterson-Smith & Slusarski, 1993; Roher, Sheeler, Furst & Bartel, 2012). Some studies have suggested that handheld technologies have several advantages over traditional paper-and-pencil modes of data capture, including but not limited to data accuracy, timeliness, and adherence to protocols for data collection (Prgomet, Georgiou & Westbrook, 2009).

The use of smartphones or similar handheld technology in future studies would provide a more sophisticated and efficient mechanism for collecting, tracking, and managing telephone communication HCUD. Using this approach, study participants could be supplied

with applications for their own or a loaned cellular phone, and could call into a dedicated clinical line using the designated device. Although we do not recommend recording of phone conversations between HCP and participant due to the potential for a breach of confidentiality, we do recommend employing applications on on HCP and participant lines which would export time stamps of user interactions, thereby creating a record with which to cross-check the documented calls (Gartenberg, et al., 2013).

Customized applications on the smartphone or similar device could also allow participants and the HCP to document phone calls after the conversation had ended using an encrypted voice-recorded or text-recorded memo system to the note the date, time, and a brief summary of the phone call (Gartenberg, et al., 2013; Kuntsche & Labhart, 2014). The HCP, using a secure study ID number provided to each participant to maintain confidentiality, could also estimate the length of the call and rate the appropriateness of the call. Additionally, the phones could have installed buzzers or other memory aids to remind both HCP and participants to document parent-provider phone conversations which had occurred recently, thus eliminating the need to send out frequent reminders and decreasing recall bias. Pilot testing would strengthen the validity of this approach.

Given the popularity and substantial growth in the use of smartphones and similar devices (Batista & Ganlani, 2013), there is certain to be a constant and growing stream of applications in many phases of healthcare practice and research, including applications for the retrieval of HCUD (West, 2012). The use of these technologies in future studies would eliminate the potential for redundancies or double-entry problems, and facilitate more rapid data-handling. The portability of smartphones allows for documentation to be sent from multiple locations. Utilizing this collection method, data can be synchronized with installed computer systems and easily programmed to display improved quality and accuracy of comparative data (Prgomet, et al., 2009).

Although qualitative interviews of both parents and HCP were not planned to elaborate this phase of the study, in-depth interviews in future studies could help to elaborate the contextual nature and quality of parent calls to HCP. In addition, piloting of both qualitative and quantitative procedures to be implemented in the collection and evaluation of HCUD would allow for testing of the design and implementation of adjustments as needed.

However, even with the implementation of innovative technologies directed at improved retrieval of HCUD, and the addition of qualitative interviews at the end of the study period, it is important to remain vigilant for the unexpected—if you are sure it won't happen, it will—and to be open to finding creative ways to problem-solve issues that emerge.

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HCP DOCUMENTATION of PARENT CALLS

Patient Name: _____

Date: _____

Time of Call: _____ am / pm (circle)

Reason for Call	Length of Call (in minutes)	Comments	Rate call: 1) Appropriate 2) Neutral 3) Inappropriate
a) Blood Sugar Review/ Insulin Adjustment b) Sick Day Call c) General Diabetes Management d) School or Daycare Issues			

Figure 1.

HCP documentation of parent calls. Providers are asked to keep track of calls to the nurses' line during the day, and to the pediatric endocrinologist (often a resident on duty) who is "on call" during weekends, holidays, and nights. Providers are expected to complete the log at the point of contact. In order to keep the process simple they are asked to fill in with a simple check mark the reason for the call (e.g., for blood sugar review, sick day call, general management, etc.), estimate the approximate length of call, to rate whether the call was determined to be appropriate, inappropriate, or neutral and to briefly comment if needed.

PARENT CALL-IN LOG

ID #:			Please document any Emergency or Clinic visits (date/time)
Date of Call	Time of Call	Reason for Calling	

- On Monday through Friday, between 9 am and 5 pm, please dial the Nurses' Phone Line at _____
- On weekends, holidays, and nights, please dial _____, and ask them to page the pediatric endocrinologist "on call."
- Parents are asked to keep track of date, time, reason for the call to provider, and any clinic or Emergency Department follow-up resulting from provider consultation.

Figure 2.
Parent call-in log.

Graph 1.

Distribution and Rate of Parent and HCP Documentation of Parent Calls Using 6 Months for Participant Days 02-03-14