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## Introduction

Family medicine is a medical specialty which aims to provide comprehensive health care for the individual, family, and community.<sup>1</sup> The American Academy of Family Physicians (AAFP) further defines family medicine in the context of primary care, as serving a role in health promotion, disease prevention, counseling, patient education, and care for acute and chronic illness.<sup>2</sup> Providing medical care and parental guidance for pediatric patients historically has been a large part of family practice. Based on a survey conducted by the AAFP in 2008, 87.9% of family medicine residency graduates participate in pediatric care.<sup>3</sup>

Residency programs in family medicine are structured to prepare physicians for future practice in a primary care environment. The Accreditation Council for Graduate Medical Education (ACGME) is responsible for verifying appropriate education at each residency site. The Residency Review Committee, a sub-group of the ACGME, identifies core competencies and skills for each medical specialty. Specifically regarding pediatric care, this committee requires that family medicine residents are trained in the care of neonates and infants in a structured manner through teaching and role modeling by the family medicine faculty.<sup>4</sup> There are certain requirements for the number of months of training in the pediatric inpatient and outpatient settings, but individual residency programs are left to determine the practical details of the training requirements.

Residency training can be measured in several ways, including physician knowledge, confidence, or practice of a given skill. In terms of practice level performance, primary care groups in North Carolina are not fully meeting recommendations for pediatric preventive services. Specifically, only 39% of children at the included practices received at least three of the four surveyed preventive services.<sup>5</sup> To further examine the practice and opinions of

physicians, some authors have made comparisons between family medicine and pediatric physicians. In one such study, family medicine physicians were 5.4 times less likely to provide poison prevention counseling to parents. These family physicians cited lack of training as the primary reason for not offering this type of guidance.<sup>6</sup>

Aside from traditional pediatric rotations, direct patient care, and didactics, there is no formal curriculum for early childhood preventive care in the University of North Carolina (UNC) Department of Family Medicine at this time. In 2006, Dr. Cristen Page performed a needs assessment for structured pediatric training in the family medicine residency program at UNC. This assessment collected opinions of graduating family medicine residents through a brief survey. The results indicate that a majority of residents are not confident in their outpatient pediatric training and desired an increase in the amount of training they received (data not published). This needs assessment, in light of national requirements and guidelines for residency training, encouraged the development of a new curriculum in well-child care.

The WellBabies Resident Curriculum is a program for UNC family medicine residents based on group well-child care. Group well-child care involves bringing several patients together for a medical visit, allowing group discussion of prevention and counseling topics. Several research groups have shown that group visits are an acceptable alternative to traditional individual care.<sup>7-11</sup> In addition, group visits provide an environment for coverage of a greater number of prevention topics.<sup>12</sup> The WellBabies Resident Curriculum involves focused didactic sessions and role-modeling by family medicine faculty, in addition to instruction in the evidence base for pediatric preventive care. The curriculum is designed to help residents increase their understanding and knowledge of the evidence for common counseling topics and build their confidence for providing such counseling to parents. This paper will present the program description of the WellBabies Resident Curriculum and the associated evaluation plan.

# Literature Review

## Introduction

The program presented in this paper is based upon the group visit model of care, particularly pertaining to well-child care. In order to identify the aspects of group well-child care that make it amenable to the proposed program, I first conducted a review of published literature about the history, advantages, and challenges of group well-child care. Next, in order to inform the design and implementation of the WellBabies Resident Curriculum, I searched for publications about other program designs and evaluations pertinent to my topic. Specifically, I examine programs that have used group care as a venue for training and programs that have aimed to educate residents about well-child preventive health topics. From the design, implementation, and evaluation of these programs, I draw conclusions useful for the development of the WellBabies Resident Curriculum.

## Group Well-Child Care

### *Search Strategy:*

In order to identify published literature about group well-child care, I began with a search of articles filed in PubMed MEDLINE. Given the unique structure of care under examination, my main search only included the term “group well-child care”. This simple search produced results including most of the literature on group pediatric visits. To ensure that I captured all articles on this topic, I additionally searched each author’s last name with “well-child care”, and reviewed the resulting abstracts for details about group care. I performed subsequent searches with authors’ names and the term “group health”, “cluster visits”, and “shared medical

appointments”, other terms for group well-child care. This search produced nine articles examining various aspects of group well-child care.

#### *History of Group Well-Child Care:*

The first published report of group well-child care is written by Marie Feldman in 1974. At this time, Ms. Feldman was a pediatric nurse practitioner at Kaiser-Permanente Medical Center. In her article, this nurse discusses the process of implementing cluster visits in her practice and the observations associated with this inaugural program. The structure of the group visits described by Ms. Feldman is quite similar to current group well-child visits.<sup>10</sup> The first published study of group well-child care comes from Osborn and Woolley in 1981. This group offered the first real evidence about the clinical acceptability of group well-child care in comparison to individual care.<sup>7</sup> Dr. Osborn has since written additional suggestions regarding education in well-child care and recommendations for the use of group well-child care based on her lengthy experience with the model.<sup>13,14</sup> Osborn collaborated with colleagues again in the early 1990’s to address the potential advantage of group well-child care in prevention counseling.<sup>12</sup> Significant work on the usefulness of group well-child care did not surface again until the late 1990’s when Taylor, Davis and Kemper designed a randomized control trial to examine group well-child care in a high-risk population.<sup>8,9,15</sup> Again, further examination of this model of care was lacking until a group from the Department of Family Medicine at the University of North Carolina published in 2010 about their current model of group care for infant health maintenance.<sup>11</sup>

#### *Medical Outcomes:*

If group well-child care is going to serve as a substitute for individual well-child care, we need to be certain that this model is providing the same level or standard of medical care. This question has been addressed by several groups. Osborn and Woolley report that health service

utilization did not differ between group and individual care groups. Mothers in group care sought less advice in between well-child visits than mothers in individual care.<sup>7</sup> In a study of group care in high-risk populations, another research group found that compliance with immunization recommendations was less in group care (but not statistically significant). Those participants in individual care, however, were more likely to visit the Emergency Department at least one time.<sup>8</sup> Although using data from a small sample size, the UNC research group actually showed greater vaccination compliance in group care compared to individual care. Moreover, the general practice comparison group visited acute clinics and the Emergency Department more often.<sup>11</sup>

An additional aspect of well-child care is addressing behavioral-developmental topics and issues with parents. In addressing this issue in a high-risk population, one group showed no difference in developmental outcomes or maternal-infant interaction between group care and individual care.<sup>9</sup> The combination of all these results indicates that group well-child care is a viable and appropriate alternative to individual well-child care.

*Patient and Provider Satisfaction:*

From the first published material until current models of group well-child care, patient and provider satisfaction with group care have been high. Based on participating mothers' responses to a post-visit questionnaire, Ms. Feldman reported high patient satisfaction with the new model of care.<sup>10</sup> This patient satisfaction was corroborated in Osborn and Woolley's work, indicating comparable satisfaction levels between mothers from group care and those from individual care. Moreover, the clinicians facilitating the group visits found this form of care to be effective, if technical challenges of offering group care were addressed.<sup>7</sup> More recently, Page et al. interviewed mothers following participation in group well-child care. Overall the responses were positive.<sup>11</sup> In each of these studies, mothers cited various reasons for satisfaction



including mutual support from other mothers, learning from fellow participants, and assurance from observing the variety of temperaments and developmental stages of other children.<sup>7, 11</sup>

#### *Counseling Opportunities:*

One potential advantage of group well-child care over individual care is the total amount of time dedicated to preventive counseling and guidance. Dr. Osborn first broached this subject in an article outlining her experience with group visits. Increased time for counseling allows for more topics to be covered and at greater length.<sup>14</sup> Dr. Osborn's informal observations were verified in 1993 in a study that examined exactly this issue. By coding the preventive topics covered during both group and individual care, this research group found that more topics were addressed in all areas of prevention in the group visits. Moreover, parents in group visits were able to suggest topics for discussion more often than in individual visits.<sup>12</sup> Reflecting this increased time for counseling, a research group used group well-child care as the venue for determining whether burn prevention counseling was effective at changing behavior in the homes of patients. The results indicate that at home prevention increased following counseling during a group well-child visit.<sup>16</sup> Given that the counseling structure of group visits differs from individual care, these results cannot be generalized to prevention counseling during individual visits without further data. Overall, it appears that group well-child care offers a unique opportunity for covering prevention topics with parents to a degree that affects behavior.

#### **Medical education through group visits**

##### *Search Strategy:*

To identify prior work using group visits as a venue for medical education, I conducted searches using PubMed MEDLINE with the following MeSH terms: Internship and Residency,

Curriculum, Program Development, Program Evaluation, and Competency-Based Education. I also included the non-MeSH terms for group visits to narrow the search to only programs using this model of care. I reviewed the abstracts of the returned publications and selected articles addressing issues pertinent to my proposed program. A summary table of study characteristics, conclusions, and application can be found in Table 1 at the end of this section.

*Program Structure:*

Najm et al; 2009<sup>17</sup>: At a teaching community clinic in California, Najm et al. designed a curriculum for third year medical students centered on group medical care. This program used group visits for Latino diabetic patients as the venue for education about cultural competence and the potential use of group medical visits for management of chronic illness. Students participated in this program as a part of the clinical portion of their family medicine clerkship. This curriculum included giving students information and readings about diabetes and the Latino culture at the beginning of the clerkship. Students participated in the group medical visit during the third week of this rotation. Participation involved a didactic session outlining the purpose and structure of the group visit prior to beginning the session. Students assisted in the individual examination of the patients. Once the group commenced, students observed as a physician lead group discussion about a specific topic and answered questions

Evaluation of this program involved pre- and post-course surveys and reflective essays. The survey questions covered issues regarding resources to learn about cultural issues, knowledge of Latino-specific health related beliefs pertaining to diabetes, and familiarity with the structure and use of group medical visits. Students also had the opportunity to provide narrative responses about what they valued most from the group visit experience and what they would change about the model. The reflective essays asked students to discuss several topics, using two different clinical settings they experienced during the family medicine clerkship.

These topics included how cultural differences enhanced or complicated the medical visit, lessons learned about cultural competence in medical encounters, and positive or negative characteristics of physician role-models.

The results from this evaluation show general benefit from medical student participation in group visits for diabetic care with Latino patients. Following participation, students noted an increased number of resources from which they could learn about cultural issues involved with diabetic care (pre: 1.13 sources, post: 1.47 sources,  $p=0.015$ ). Students also showed an increase in cultural knowledge about health beliefs and increased understanding about the role and delivery of group medical care (knowledge test paired difference 1.29, 95% CI 0.92, 1.66). Through the narrative responses, students discussed the potential for patient-to-patient education and cultural education through the group visit model.

This evaluation was strengthened by the use of two different methods of gathering information from participants. The essays complemented the data collected through the structured surveys. The responses on the reflective essays could have been biased as students chose which clinical encounters they used to answer the prompts. Furthermore, the individual contribution of the group visit model to medical student education cannot be separated fully from the rest of the family medicine clerkship since the surveys were administered at the beginning and end of the entire clerkship. Inasmuch as the rest of the family medicine clerkship at this institution resembles the structure of clerkships elsewhere, the results from this study can be generalized to reflect the expected advantages of incorporating a group visit model into the clinical education.

Kirsh and Aron; 2008<sup>18</sup>: In response to the core competencies for internal medicine resident education outlined by the Accreditation Council for Graduate Medical Education, this group implemented a program centered on shared medical appointments.

This program is located in an academic primary care clinic associated with the Veterans Healthcare Administration (VA). Patients are identified for participation in diabetes group visits through the extensive clinical registry of the VA. The group visits involve a multi-disciplinary approach to care, incorporating physicians, nurse practitioners, health psychologists, pharmacists, and registered nurses. Each group visit allows time for interactive learning through formal instruction and sharing of patient experience, followed by individual visits with a health care provider. Resident physicians in internal medicine participate with between two and six group visits during the ambulatory block rotation. By participating in this model of care, the trainee observes interdisciplinary care, chronic illness care, quality improvement, and skills to enhance self-management and self-efficacy in patients.

Evaluation of this program is still preliminary. Results from focus groups conducted with participating residents showed themes about patient benefits, learning from team members, chronic disease management through group visits, and patient-centered care. Pilot testing of another evaluation instrument found increased resident confidence in expressing clinical recommendations to other healthcare providers following participation in group medical visits (no statistical analysis presented by authors).

This group offered strong theory for the development of a group visit model for resident education in management of chronic medical conditions. Further evaluation needs to be completed to inform conclusions about the effectiveness of this program as well as potential changes to strengthen the program design.

Nuovo et al.; 2004<sup>19</sup>: In attempting to design a curriculum based on the Improving Chronic Illness Care (ICIC) Model, this research team incorporated group visits as a method of care for diabetic patients. Group medical visits were one aspect of a larger educational strategy to teach family medicine residents about disease management of chronic illness. The entire program

involved development of a diabetic patient registry, formation of a multi-disciplinary care team, incorporation of diabetes teaching clinics into the health center, implementing a group visit model, and educating residents on the elements of the ICIC Model.

Regarding the group visit portion of the program specifically, resident physicians had a defined role in both planning and running the session. Residents assisted in identifying and recruiting diabetic patients from their continuity practice using the patient registry. The group session was facilitated by a health care team, including a diabetic educator, a family physician, two resident physicians, and a psychologist. Educational goals for resident involvement with group visits included learning the process of planning a group visit and implementing this plan, gaining skills for self-management education and motivation, increasing ability to incorporate stress management into disease care, and understanding the process of collaborative goal setting. Resident physicians were also involved with individual care of diabetic patients, as well as online activities that facilitated continuity of care for diabetic patients.

This program was assessed qualitatively using a survey administered to participating residents. As the structure of the program focused on meeting the elements of the ICIC Model, the survey also focused on these factors. Based on comparison of pre- and post-intervention surveys, the entire program resulted in increased resident confidence in ability to explain diabetes to patients and to assist patients in self-management of this disease. Moreover, participation in the program resulted in increased confidence in diagnosis and treatment of diabetes (no statistical analysis presented by authors). Although the exact contribution of resident participation in group medical care cannot be isolated from the other components of the program, the results of this study seem promising for the potential for education through group care.

### *Analysis and Integration:*

Each of the above programs and associated evaluations offers valuable information for the WellBabies Resident Curriculum. Much of the literature available on group visits involves the use of this model of care for chronic illnesses, as is reflected in the programs presented above. Moreover, because most of these programs involved multiple interventions, the direct contribution of education through the group visit model of care cannot be specifically elicited. Although the content of these visits differs greatly from what is covered during a well-child group visit, these models can be used for implementation strategies.

Two of the reviewed programs used registries to identify potential patients for group care. Nuovo et al. describe the registry created as a part of a multifaceted program designed to educate residents in disease management. This registry allowed for compilation of patient characteristics relevant for diabetes care. Residents used the registry during continuity care, as well as during group visits.<sup>19</sup> Kirsh and Aron also used a registry in their chronic care program. This group had the advantage of an established registry through the VA.<sup>18</sup> Both groups used these registries to identify potential patients for group visits. These computerized programs allowed for ease of patient selection. Moreover, the centralized information helped schedule patients in group visits with a resident they previously knew. This style of recruitment is helpful as we consider implementation of the WellBabies Resident Curriculum. We expect that most of the patients scheduled for group well-child visits will be recruited through prenatal care in the Department of Family Medicine at UNC. Creating a computerized registry of these patients would help group patients by age and prior experience with particular residents. Given the time line of well-child care, we cannot ensure that a patient will see a familiar resident; a registry, however, could make this more feasible.

In preparation for the health issues addressed by the group visits, two programs provided participating trainees with printed literature prior to the actual visit. To orient medical students to diabetes care and Latino culture, Najm et al provided students with readings about these topics during orientation to the group medical visit.<sup>17</sup> Nuovo et al. took this portion of the education further, including time for discussion of articles about the management of chronic illness. This information was reinforced during case conferences and group discussions.<sup>19</sup> The inclusion of printed materials is very similar to what we plan to offer in the WellBabies Resident Curriculum. As we strive to educate residents on the evidence base for preventive well-child care, published literature will serve as the basis for this information. Residents participating in the WellBabies program will be provided printed materials reviewing the evidence base for preventive well-child topics. At this time we do not plan to offer time for formal discussion of the literature, as we expect residents to review these materials on their own. This information can serve as fodder for discussion with an attending physician during focused individual discussion time prior to and following each group visit.

Some of the primary methods of education in the WellBabies Resident Curriculum are role-modeling, observation, and feedback. Nuovo et al. incorporated observation into their program, having second and third year residents paired together. For each group visit, residents alternated duties, allowing one resident to observe the technique and strategy of the other resident during a visit. Each group visit was followed by a de-brief session which included the other providers assisting in the group visit.<sup>19</sup> In their program involving medical students, Najm et al. primarily used observation as the form of education. Given the level of training of the participants, this structure was appropriate. Kirsh and Aron emphasize the opportunity participating residents had to observe interactions among health care providers from different fields while working during group visits.

Each program summarized above used some amount of evaluation to inform the usefulness of the program for medical education. Two programs used pre- and post-surveys to elicit changes in opinion following participation in the program. Nuovo et al measured differences across one year of resident education and primarily examined resident understanding of chronic medical care.<sup>19</sup> In addition to survey information, Najm et al. used student essays to identify themes about the acceptability and satisfaction with group visits. For this study, differences in opinion were measured over the course of a month, spanning the entire family medicine clerkship period.<sup>17</sup> In preliminary evaluation of their program, Kirsh and Aron conducted focus group meetings with the participating residents to determine themes of participant perceptions. These authors also are developing an instrument to measure provider confidence in various activities and skills in diabetes care.<sup>18</sup>

In the WellBabies Resident Curriculum, we plan to measure change in confidence and knowledge of infant health topics across the course of the intervention. One problem for the studies measuring change is the length of time between the pre- and post-assessment. Residents and medical students had many other activities influencing their knowledge and opinions between these two assessments. Thus, the specific benefit of education through group visits cannot be specified. With this in mind, we plan to administer the post-assessments for our program immediately following the final group visit. We will also include qualitative data to support quantitative data gathered through the surveys. Inclusion of several types of data allows us to examine results from several angles, theoretically bringing us closer to the truth.



Table 1: Summary of literature on medical education through group visits

Program	Goal	Program Details	Evaluation	Outcomes	Helpful Lessons
<b>Najm et al; 2009<sup>17</sup></b>	To increase medical students' knowledge about patients' cultural beliefs and the usefulness of group care	After reviewing literature on diabetes and the Latino culture, medical students observed group visits for diabetes care for Latino patients	Pre- and post-course surveys and reflective essays	After participating in the program, students knew of more sources for learning about cultural issues. Students increased knowledge about health beliefs and understanding of group medical care.	<ul style="list-style-type: none"> <li>- Providing participants with relevant literature</li> <li>- Role-modeling and observation of skills</li> <li>- Usefulness of qualitative data</li> </ul>
<b>Kirsh and Aron; 2008<sup>18</sup></b>	To enhance resident training in six core competencies	Residents join a multi-disciplinary team to assist in leading diabetes group visits	Participant interviews and pilot testing of confidence survey	Preliminary results show increased resident confidence in working with a variety of health care providers. Interview themes include patient benefits, learning from team members, chronic disease management, and patient-centered care.	<ul style="list-style-type: none"> <li>- Use of patient registry for recruitment</li> <li>- Observation of skills</li> <li>- Usefulness of qualitative data</li> </ul>
<b>Nuovo et al; 2004<sup>19</sup></b>	To enhance resident training in chronic disease care	First, developed a disease management program for diabetes care and an associated resident curriculum. This model of care and training included residents leading group visits.	Pre- and post-intervention surveys	Increase resident confidence in explaining diabetes, assisting patients in self-management of disease, and in diagnosing and managing diabetes	<ul style="list-style-type: none"> <li>- Use of patient registry for recruitment</li> <li>- Providing participants with relevant literature</li> <li>- Discussion of literature</li> <li>- Role-modeling and observation of skills</li> <li>- Timing of pre/post surveys</li> </ul>

## **Medical education in preventive well-child care, counseling, and communication**

### *Search Strategy:*

I searched PubMed MEDLINE for published literature addressing education of residents in preventive well-child care. After conducting a general search with a variety of terms, I identified relevant MeSH terms. These terms included Clinical Competence, Curriculum, Internship and Residency, Pediatrics/education, and Program Evaluation. I also included terms for prevention, including Prevention and Anticipatory Guidance. From the results of searches with various combinations of these terms, I read abstracts to select relevant articles that could inform my program design. A summary table of study characteristics, conclusions, and application can be found in Table 2 at the end of this section.

### *Program Structure:*

Hillenbrand and Larsen; 2002<sup>20</sup>: One common topic that surfaces during well-child care is breastfeeding. Fortunately there is a strong evidence base about the benefits of breastfeeding for both the mother and child. In response to low breastfeeding rates in mothers, and the lack of physician confidence in counseling mothers about breastfeeding, this research group created an educational intervention for pediatric residents about breastfeeding.

This program consisted of a four-part series on breast-feeding. In addition to receiving literature about breastfeeding topics, residents also participated in interactive courses covering a variety of issues. These sessions involved role-playing and demonstration exercises, as well as discussions about the literature base for dealing with common breastfeeding problems. The final day of the series featured a panel discussion of breastfeeding mothers addressing issues of support and needs.

Evaluation of this program was pursued on three levels: knowledge, confidence, and behaviors. The knowledge and confidence of participating pediatric residents about discussing breastfeeding were assessed using pre- and post-intervention surveys. Resident behaviors of counseling were determined through interviews with mothers of pediatric patients of the resident. Interviews were conducted both before and after the intervention so that an adequate comparison could be made. Responses during the interview were used to determine whether the resident had performed certain important counseling tasks, outlined prior to the study by the research team. Acceptable counseling performance was defined as incorporating at least six of these nine topics.

Upon evaluation, the authors show that the educational intervention helped pediatric residents increase their knowledge and confidence in counseling mothers about breastfeeding. They also report an increase in appropriate counseling behaviors of residents following participation in this program. Specifically, the composite knowledge score increased by 11%, from 69% pre-intervention to 80% post-intervention ( $p < 0.001$ ). Prior to the intervention, residents performed above the defined threshold for acceptable counseling in 22% of medical visits. Appropriate counseling behavior increased to 65% of medical visits following the intervention ( $p = 0.006$ ).

Gielen et al.; 2001<sup>21</sup>: In order to address one topic of preventive well-child care, this research group designed a training program in injury prevention counseling for pediatric residents. This program was created to improve pediatric residents' performance of anticipatory guidance regarding safety practices for preventing falls, burns, and poisoning in young children.

Consenting pediatric residents were randomized to either an intervention group or a control group. Both groups received a single seminar about the established recommendations for injury-prevention counseling. The intervention group also participated in an additional five hours of training which included lessons on counseling techniques, role-playing exercises,

homework assignments, and distribution of materials reinforcing the skills and facts learned during the session.

Evaluation of this program involved several different measures. Parents of patients of each participating resident were approached regarding participation in this program, as all the data for evaluation came from these families. Families completed a baseline interview to determine knowledge and practice of safety measures. Each medical visit with a participating resident and parent was audio-taped and subsequently coded for the use of certain communication skills and coverage of safety strategies. Following each individual medical visit, parents completed a satisfaction survey about how much the resident assisted the parent in several areas of pediatric health prevention. Follow-up interviews were conducted with parents when the child reached 12 to 18 months of age. These interviews addressed knowledge of potential pediatric injuries, prevention strategies, and self-report of safety practice. This self-report was corroborated by home observation.

In analysis of office visits, residents in the intervention group were more likely to present safety strategies and use appropriate communication skills during injury prevention counseling than residents in the control group. Residents receiving the intervention mentioned  $9.4 \pm 6.8$  safety practices and used  $15.1 \pm 11.3$  communication skills; residents in the control group addressed  $3.7 \pm 3.2$  safety practices while using  $6.0 \pm 5.5$  communication skills. When examining individual safety topics, the intervention group was statistically significantly more likely to mention safety strategies using more communication skills.

Parents were more satisfied with the injury prevention counseling they received from intervention group residents than from control group residents; on the whole, however, parents in both groups were very satisfied with the prevention guidance they received. The only difference showing statistical significance was greater satisfaction in the intervention group for safety

counseling ( $p=0.01$ ). On follow-up interview, parents in the intervention group and the control group were similar in knowledge and beliefs about injuries and prevention. Self-reported safety practices also did not differ between the two groups. On home observation, only two precautions differed between the groups: the intervention group had a greater percentage of stairs protected by gate or door and had a greater percentage of working smoke alarms, as compared to the control group (no statistical analysis presented by authors).

These results indicate that the training program did improve residents' performance of counseling about injury prevention. This improvement did not translate into behavioral changes in the households of patients. Although there were some slight differences at follow-up, overall changes were minimal. Most parents knew about the risk of injuries, but they were often incorrect about preventive measures and current behavioral practices. This discrepancy should inform future programs for both physicians and parents, with a goal of correcting these misconceptions.

Barton, Wright, and Lloyd; 1999<sup>22</sup>: In one of the few programs designed to address multiple well-child health issues, this research group showed the benefits of their "Well-Child Curriculum". This program included education about immunizations, breastfeeding and nutrition, childhood development, normal voiding and stooling patterns, and behavioral issues.

The program was designed around discussion sessions dedicated to a single topic. The sessions were geared towards first-year pediatric residents, although any resident could attend. The discussion was guided by a second-year resident and a faculty member. Most sessions used a case-base format, supplemented by handouts and teaching aids.

Evaluation of the program was pursued through pre-and post-intervention questionnaires. This tool was designed to evaluate residents' knowledge and confidence in the subjects presented during the group sessions. Twelve interns participated in the program and completed the

evaluation. The results indicate that residents increased both their knowledge and confidence in these well-child health topics following the intervention. Given the small sample size of this study, no statistical analysis was presented by the authors.

Schaff-Blass et al.; 2006<sup>23</sup>: Despite recommendations for the new techniques in medical education about oral health, few studies have published a curriculum for this use. This research group addresses this void by creating a program to educate pediatric residents about oral health, with hopes of fostering increased knowledge, confidence, and practice of counseling skills.

Relying on a multifaceted approach, this program incorporated didactic sessions, experiential learning, preventive oral health reminders, and training in systems-based change. Lectures and pre-clinic conferences allowed for education in the evidence base for pediatric oral health topics. Dental faculty provided instruction during routine clinic care, assisting pediatric residents in counseling and preventive measures. Reminders for pediatric oral health were incorporated into the patient encounter form to normalize the practice of counseling about oral health. Finally, residents were trained in strategies for system-based change to assist in the adoption of oral health practices in a clinic.

Evaluation involved pre- and post-intervention questionnaires distributed to residents at the University of North Carolina (UNC), who received the intervention, and to residents at Wake Forest University (WFU) and East Carolina University (ECU), who did not receive the program intervention. Prior to this program, ECU implemented an independent program regarding education about pediatric oral health. WFU had no such educational program. The questionnaire used for evaluation was designed to assess knowledge, opinions, confidence, and practice in areas of preventive pediatric oral health.

Based on results from the questionnaires, the intervention at UNC seemed to increase pediatric residents' knowledge and practices of oral health preventive care and counseling.

Confidence in such practices was high across all residency programs. Compared to pre-intervention results, UNC residents increased knowledge by 17.7% ( $p=0.002$ ), confidence by 17.9% ( $p=0.78$ ), and practice by 65.1% ( $p<0.001$ ). These results indicate that the educational program was successful in its aims.

The study has several limitations that need to be recognized prior to generalizing the results. First, the overall response rate for completing both pre- and post-intervention questionnaires was 55%. Non-response was unevenly distributed, with more non-responders coming from the control schools. Second, using a non-equivalent control group puts this study at risk for significant confounding factors. The main conclusions of the study are drawn from crossover analysis of pre- and post-intervention data at UNC only, alleviating the risk of confounding factors in the comparison groups. Finally, practice data was based on self-report. A stronger analysis strategy involves observation or measurement of patient adherence to medical recommendations.

Lopreiato, Roulds, and Littlefield; 2000<sup>24</sup>: In another study addressing the broad concept of well-child care, these authors describe a program designed to assist pediatric residents in learning about health maintenance topics and communication styles.

Pediatric residents from an initial academic year were used as a control group, to be compared to the residents from the following year who participated in the intervention. The curriculum involved seven modules, each focused on a single topic of well-child care. The modules involved reading assignments and a self-assessment quiz for residents to complete, along with a clinical case to be reviewed. During pre-clinical meetings with a faculty member, residents discussed the information presented in the module and attempted to solve the clinical problem. Participating residents were also given pocket-size information cards and other handouts to assist in clinical decision making and counseling about well-child health topics.

For evaluation, the authors employed several strategies. Each participating resident, both control and intervention, took a multiple choice examination that tested the resident's knowledge of the seven topic areas addressed in the curriculum. This test was made up of questions from the American Academy of Pediatrics' Review and Education Program. Another facet of evaluation was medical records review. Pediatrics faculty regularly reviewed the medical records completed by residents in the clinic. The form used for this review included measures associated with the defined well-child care topics. A data manager extracted the health maintenance results from a random selection of these review forms. The final form of evaluation used standardized patient mothers. These patients were trained on what to look for during a health maintenance visit. Residents were unaware of who the standardized patients were or when these patients would attend the clinic. The mothers completed a form about health maintenance counseling immediately following the visit.

The results show a mixed effect of the program on pediatric residents' knowledge and counseling skills in health maintenance following this structured curriculum. The examination results show no difference in knowledge of pediatric well-child health topics between the control and intervention group at the completion of the study, particularly in first year residents. Control group residents answered 61.5% of the questions correctly, while the intervention group answered 62.0% correctly (not statistically significant). Second year residents in the intervention group showed increased knowledge in a couple of specific topics, but overall they did not show significant improvement in knowledge. Documentation of health maintenance activities did increase in the intervention group, with 97.6% of first year resident study group charts being rated good to excellent, compared to 46.7% in the control group ( $p=0.001$ ). In the assessment from standardized patients, first year residents in the intervention group improved in task areas with which the control group had the most difficulty. The second year residents also improved



in a couple of specific areas. Overall, however, there were few statistical differences between the control and study groups in the practice of discussing health maintenance topics.

A follow-up survey of participating residents showed that 95% of residents found the course materials and methods useful. A majority of the residents felt stimulated to read and discuss well-child health topics further after completing the program.

*Analysis and Integration:*

The programs summarized above offer guidance for the design and implementation of the WellBabies Resident Curriculum. Although a couple of these programs tackled preventive pediatric care broadly, most programs focused on a certain topic within this field. The venues in which these programs were applied varied greatly; the educational techniques, however, appear to be consistent across the settings. These similarities inform the structure of our educational intervention, in both design and evaluation.

Most of the programs on well-child education used literature to reinforce the information provided in other contexts. Lopreiato et al. provided participants with reading assignments from published literature pertaining to specific topics. Residents reviewed this material on their own and completed a self-assessment quiz. The information was discussed in small groups of residents with a facilitating faculty member prior to the start of the continuity clinics.<sup>24</sup> Gielen et al. also used printed materials to reinforce information discussed during training sessions. This literature covered material about strategies and techniques for counseling parents about injury prevention.<sup>21</sup> Hillenbrand and Larsen assigned residents readings about breastfeeding to be completed before and during the intervention. These readings were used to generate discussion during group meetings.<sup>20</sup> Barton et al mentions providing residents with handouts and teaching aids during group sessions.<sup>22</sup> Between both these programs and those mentioned above using group visits, most of the programs reviewed provided participants with some amount of literature

or other printed materials. The pervasiveness of this strategy reinforces our decision to include provided literature in our educational model.

Role-modeling and observation were incorporated into several programs for resident education in well-child care. As a part of two training sessions, Gielen et al. used demonstration stations to allow faculty to display counseling strategies as well as the use of several safety products. These authors also used role-playing during training so residents could practice new skills under the supervision of faculty.<sup>21</sup> Hillenbrand and Larsen incorporated similar activities into their program about breastfeeding counseling. During seminars, participants were involved with role-playing and demonstrations about counseling techniques.<sup>20</sup> Barton et al. used a case base format for group discussion about a variety of pediatric topics. A second-year resident, with the assistance of a faculty member, facilitated the discussion.<sup>22</sup> The primary strategy used by Schaff-Blass et al. was lecture-based instruction, reinforced by clinical instruction by oral health faculty. This hands-on experience happened during typical clinic hours with participating residents.<sup>23</sup> In observing the results of each of these programs, those that included active learning through observation and role-modeling produced greater gains in resident knowledge and confidence in any given area of preventive pediatric care. These results are encouraging for the creation of our program focused on observation, role-modeling, and feedback between residents and attending physicians.

One major area of assessment for education is knowledge and confidence in the given field. To assess residents' gain in knowledge, Lopreiato et al. administered a multiple choice test to residents both prior to and after program participation. This test was constructed from past questions from the American Academy of Pediatrics' Review and Education Program.<sup>24</sup> Barton et al. also assessed residents' gain in knowledge based on a multiple-choice test.<sup>22</sup> Participating residents in the program described by Hillenbrand and Larsen completed a questionnaire both

before and after the intervention. This questionnaire assessed confidence and knowledge in breastfeeding counseling and was used previously by another research group.<sup>20</sup> Schaff-Blass et al. also used pre- and post-intervention questionnaires to evaluate resident knowledge and confidence in providing oral health counseling.<sup>23</sup>

In evaluation of the WellBabies Resident Curriculum, we plan to assess the change in residents' knowledge and confidence in preventive pediatric care. Pre- and post-assessments are the most reasonable strategy, as witnessed through the use of this evaluation method by most of the described programs. Moreover, the description of the formation of knowledge exams is useful. In particular, the adoption of previously used and validated questions from another exam seems reasonable for our situation.

Another aspect of assessment in medical education is measuring the difference in skills following some educational program. Lopreiato et al. used standardized patient encounters to measure the change in behavior of participating residents.<sup>24</sup> Hillenbrand and Larsen interviewed mothers of patients seen by a participating resident to determine whether certain topics were covered or certain behaviors addressed.<sup>20</sup> Gielen et al. observed the office encounters between residents and patients in order to determine how often residents mentioned safety strategies and used communication skills.<sup>21</sup> Assessment of the change in skills is difficult, requiring additional time and financial resources. Knowledge and confidence are more available proxies for the success of an educational program; for this reason, we will focus on these two areas for our evaluations.

To determine the ultimate effectiveness of an educational program in medicine, one hopes to show a change in patient behavior and health. Gielen et al designed their program with this outcome in mind. The outcomes examined were based on patient behavior and knowledge change about pediatric injury prevention, corroborated by a home visit. This assessment

involved interviews with parents both prior to and after visits with a participating resident.<sup>21</sup>

This was the only program which incorporated patient health outcomes as a marker for the success of the resident educational intervention. Without a focused program and equally focused health outcome, this change is difficult to show. Given the broad nature of the WellBabies Resident Curriculum, we have chosen not to follow patient health outcomes at this time.

Table 2: Summary of literature on medical education in preventive well-child care, counseling, and communication

Program	Goal	Program Details	Evaluation	Outcomes	Helpful Lessons
Hillenbrand and Larsen; 2002 <sup>20</sup>	To increase pediatric residents' confidence, knowledge, and practice of breastfeeding counseling skills	Participants were given literature about breastfeeding issues. Residents attended interactive courses with role-playing and demonstration activities.	Pre- and post-intervention surveys; interviews with patient mothers	Residents showed increased knowledge and confidence in breastfeeding counseling, as well as increased use of appropriate counseling behaviors.	<ul style="list-style-type: none"> <li>- Providing participants with relevant literature</li> <li>- Role-modeling and observation of skills</li> <li>- Practice of counseling skills</li> <li>- Pre/post knowledge test</li> <li>- Difficulty of measuring prevention activities of residents</li> </ul>
Gielen et al; 2001 <sup>21</sup>	To improve home safety practices for prevention of burns, falls, and poisoning in children under age 2 in low-income neighborhoods	Intervention group participated in five hours of training on counseling techniques through role-playing, homework, and printed literature.	Comparisons made between randomized intervention and control groups; pre-and post-intervention interview and home observation of patient safety practices; observation of resident interaction with patient	Intervention group was more likely to offer safety strategies while using appropriate communication skills. Similar outcomes for control and intervention group for parent knowledge and beliefs about injury prevention. No difference in self-reported safety practices.	<ul style="list-style-type: none"> <li>- Providing participants with relevant literature</li> <li>- Role-modeling and observation of skills</li> <li>- Practice of counseling skills</li> <li>- Difficulty showing change in patient behavior</li> </ul>
Barton, Wright, and Lloyd; 1999 <sup>22</sup>	To enhance pediatric resident training in well-child care	First year residents attended discussion sessions that covered a variety of well-child topics and were reinforced by handouts and teaching aids.	Pre- and post-intervention questionnaires	Increase in resident knowledge and confidence in well-child topics	<ul style="list-style-type: none"> <li>- Providing participants with relevant literature</li> <li>- Pre/post knowledge and confidence test</li> </ul>
Schaff-Blass et al; 2006 <sup>23</sup>	To improve pediatric resident training regarding the oral health needs of children	Residents participated in didactic sessions, experiential learning, and training in system-based change.	Comparison made between intervention group and two comparison groups; Pre- and post-intervention questionnaires	Increase in resident knowledge and practice of oral health preventive care and counseling	<ul style="list-style-type: none"> <li>- Practice of prevention skills</li> <li>- Pre/post knowledge test</li> </ul>
Lopreiato, Roulds, and Littlefield; 2000 <sup>24</sup>	To improve pediatric physician training in health supervision and well-child care	Curriculum included seven modules, each focusing on a specific topic in well-child care. These modules involved reading assignments, self-assessments, and cases that were discussed as a group.	Comparison made between intervention and control group; knowledge tests; medical record review; standardized patient mothers	No change in resident knowledge of well-child topics. Increased documentation of health maintenance activities in intervention group	<ul style="list-style-type: none"> <li>- Providing participants with relevant literature</li> <li>- Pre/post knowledge test using previously validated questions</li> <li>- Difficulty of measuring prevention activities of residents</li> </ul>

## **Program Plan**

### **Introduction and Rationale**

The WellBabies Resident Curriculum aims to improve family medicine residents' ability to counsel parents about infant health topics through an education program using group well-child care.

Group visit models have been established and examined for several targeted populations, including chronic illness and diabetes care.<sup>25</sup> In general, a medical group visit involves the gathering of several patients with a common goal or condition. The counseling, education, and advising portions of the medical visit are performed as a group with a facilitating medical provider. Individual exams are included in the group setting or in separate private rooms, depending on the condition or situation being addressed.

A group model for well-child care was first well described in 1981 by Osborn and Woolley. In their published report, these authors show that group well-child care offers an appropriate alternative to individual well-child care in terms of efficiency, effectiveness, content, patient satisfaction, and provider satisfaction.<sup>7</sup> Taylor, Davis, and Kemper drew similar conclusions after conducting a randomized controlled trial of group visits for well-child care in high risk children. These authors indicate that both clinical outcomes (i.e. immunizations, visits to emergency department) and developmental outcomes at two years of age were similar among children randomized to group care and those randomized to traditional individual care.<sup>8,9</sup> A more recent study out of the UNC Department of Family Medicine indicated similar clinical outcomes, as well as high acceptance and satisfaction with the model among participating mothers.<sup>11</sup> Together, these studies show that group well-child care is an appropriate substitute or alternative to individual well-child care.

One potential difference between group and individual well-child visits is the time dedicated to covering prevention topics and counseling. Since all discussion happens together in the group visit, the greater amount of time dedicated to counseling allows for more topics to be covered. In examining the content of both group and individual well-child visits, one research group showed that more recommended topics were covered in the group visits compared to the individual visits.<sup>12</sup> This difference in counseling time between individual and group visits gives the latter a potential advantage for both patient care and medical education opportunities. It is this advantage, specifically, that we hope to employ in the WellBabies Resident Curriculum.

The Accreditation Council for Graduate Medical Education is the national governing body for medical resident education. A sub-committee of this organization, the Residency Review Committee, writes the requirements and guidelines for residency programs. Specifically for training in pediatric care, this committee requires that family medicine residents are trained in the care of neonates and infants in a structured manner through teaching and role modeling by the family medicine faculty.<sup>4</sup> The practical details of meeting these guidelines are left to individual residency programs.

Aside from traditional pediatric rotations, direct patient care, and didactics, there is no formal curriculum for early childhood preventive care in the UNC Department of Family Medicine at this time. In 2006, Dr. Cristen Page performed a needs assessment for structured pediatric training in the family medicine residency program at UNC. The assessment was based on opinions of graduating family medicine residents, expressed through a brief survey. The results indicate that a majority of residents were not confident in their outpatient pediatric training and desired an increase in the amount of training they received (data not published). These results encouraged the development of a program to address both the national requirements and the need for more focused training in pediatric preventive care.

Given that group well-child care lends itself to greater time spent counseling parents, this model of care offers potential for resident training in pediatric outpatient care. This program plan will present a model for resident training using group well-child care. Through this program, we hope to help residents increase their understanding and knowledge of the evidence for common counseling topics and build their confidence for providing such counseling to parents.

## **Context**

*Political Environment:* The political environment is ripe with interest in developing evidence-based medical practice and pursuing methods of encouraging preventive care.

*National Priorities:* National health priorities, as represented by the Healthy People 2010 project, identify several objectives for improving health that are pertinent to our program. These include addressing access to health care, developing educational programs, and fostering health communication (See Appendix A for specific objectives).<sup>26</sup> Our program will seek to address these areas through educating physicians on proper communication. This program can potentially affect several other objectives secondarily through improvements in delivered preventive care. Other national priorities are outlined by the Future of Family Medicine (FFM) project. FFM calls for innovative approaches to resident education in family medicine focused on evidence-based practice with an emphasis on interpersonal skills.<sup>27</sup> By using a unique model of care as the venue for family medicine resident education, we will strive to meet this recommendation.

*State and Local Priorities:* In addition to supporting national priorities, our program will also align with state and local priorities. Mirroring the national Healthy People 2010 project, North



Carolina identifies the major areas for health care enhancement for the state in Healthy Carolinians 2010. Our program will work towards aspects of several goals presented in this project, thus supporting the health of North Carolina residents (see Appendix B for specific goals).<sup>28</sup> Local priorities reflect those developed at the state level, especially given that a large public hospital and medical school are located here in Chapel Hill. The UNC-Chapel Hill School of Medicine is committed to improving the health of North Carolinians through excellent patient care, innovative curriculum for training physicians, and development of research programs.<sup>29</sup> In our program to improve the training of family medicine residents, we will honor this commitment.

*Program Acceptability:* This program uses a group well-child care model as the venue for resident education and training. This group care model already is established and functioning in the Department of Family Medicine at UNC. Several residents and attending physicians have used this model of care informally for resident education. Preliminary feedback through conversations and email from these individuals thus far has been positive and encourages the development of our program. Several research groups previously have examined patient satisfaction with the group well-child model of care. The most recent publication, coming from the UNC Department of Family Medicine, indicates that patients enjoy the group environment and find this form of care acceptable.<sup>11</sup>

*Financial Resources:* As a model of group well-child care is already functioning well in the UNC Department of Family Medicine, additional financial resources are not currently required to begin this program. Several faculty members have some time committed to resident education development and research. Articles outlining implementation of group well-child care resulting from our work would be helpful to other institutions which are interested in establishing this model of care.

*Technical Feasibility:* This educational program requires the use of group well-child care. This model of care is already organized at UNC-Chapel Hill. Methods are required to arrange resident schedules such that appropriate time can be committed to this program, but this is feasible given the support from the faculty in the Department of Family Medicine and from residents at UNC.

*Program Stakeholders:* Family medicine residents at UNC-Chapel Hill have previously expressed interest in and need for additional training in well-child care and counseling through an informal needs assessment. This needs assessment involved a short electronic survey completed by several graduating family medicine residents at UNC. Aligning with the mission of the residency program in family medicine at UNC, faculty members at UNC-Chapel Hill are devoted to developing the medical skills of students and residents. The mission of this program also encourages embracing change, which promotes a continual pursuit of excellence in patient care and education.<sup>30</sup> As our program aligns with these stated standards, general faculty support is expected as we implement this program.

*Challenges:* In preparing our program, we recognize a few challenges that will pose difficulties for both planning and implementation of our program. First of all, the primary challenge will be the logistics of coordinating the schedules of the participating residents and attending physicians. For resident scheduling, we must comply with the Residency Review Committee's requirements for work hours and clinical contacts. We must also be sympathetic to the non-educational commitments of faculty when scheduling group well-child visits along with appropriate pre- and post-visit individual didactic sessions. Limited faculty time for development of this program poses difficulties for both initial implementation and sustainability of the curriculum.

Akin to scheduling residents and attending physicians, we also expect to encounter difficulty in recruiting enough patients to participate in group well-child care. Since individual

care historically has been the standard for pediatric care, recruitment for group visits requires substantial education and time. Without the proper number of willing patients, we will be unable to offer enough group visits for all second and third year family medicine residents to participate in our program. If at least six patients attend a group visit, the cost of personnel time and equipment reaches a break even point.

Our other challenge involves the evidence base for well-child care and counseling. Unfortunately there is limited evidence to guide advice; subsequently, many faculty and residents are shaped by personal experience that could be independent of scientific evidence. Changing opinion or practice will be difficult. The variability of information provided by attending physicians could influence the knowledge gained by the participating family medicine resident.

## **Goal and Objectives**

### *Goal*

Improve UNC family medicine residents' ability to counsel parents about infant health topics.

### *Objectives*

1. Within one year of implementing the program, 90% of second and third year family medicine residents at UNC will have attended at least one group well-child visit with an attending physician.
2. Within one year of implementing the program, 80% of participating residents will have structured curricular time before and structured feedback from an attending physician after participating in a group well-child visit

3. Within two years of implementing the program, 90% of second and third year family medicine residents at UNC will have participated in at least three group well-child visits.
4. Within two years of implementing the program, 90% of family medicine residents completing three group well-child visits will increase by 20% their overall confidence in counseling parents about infant health topics.
5. Within two years of implementing the program, 90% of family medicine residents completing three group well-child visits will increase by 10% their knowledge about the evidence base for infant well-child care.
6. Within five years of implementing the program, all (100%) graduating family medicine residents will have participated in three group well-child visits.
7. Within five years of implementing the program, participants in this program will see more pediatric patients in their medical practices compared to a matched cohort.

### **Program Theory**

In recognizing that an individual's behavior is best understood in the context of the social and physical environment, we will use the ecological model to identify pertinent program theories. These theories will inform both our conclusions about the initial problem with current resident education in well-child care and the structure of our program aimed to address this problem.

*Intrapersonal Level:* The following aspects of the Health Belief Model will be adapted to our program: perceived susceptibility, perceived benefits, perceived barriers, and cues to action. During our needs assessment we assessed the confidence of family medicine residents in well-child care and counseling. This assessment gives us a general picture of what family medicine

residents perceive as their ability to perform well-child care adequately – a marker for a resident’s “susceptibility” to a lack of confidence in well-child care. This concept will be determined on an individual level through pre-surveys that identify the areas of preventive well-child care with which the resident is least confident in his abilities. A resident’s perceived benefit of our program is important in influencing the resident’s motivation and desire for participation. The perceived barriers for a resident to participate in our program could inhibit a resident’s participation. Our program will provide residents with a cue to action – an organized program aimed to increase the resident’s confidence and skills in well-child care.

The Consumer Information Processing Theory also provides concepts to be used in our program plan. Specifically, we recognize that individuals have a certain capacity for information processing. As such, we will build our program structure such that residents receive information over an extended period of time. We will aid participants’ information search through providing important literature and organizing instruction by an attending physician. Finally, our entire program is centered on the environment in which the resident is exposed to information. The group well-child care model provides a different environment from traditional resident education to allow development of additional skills in preventive well-child care.

*Interpersonal Level:* Our program targets family medicine residents, who interact with each other and with attending physicians. Social Cognitive Theory concepts that we will include in our program are reciprocal determinism, behavioral capability, self-efficacy, observational learning, and reinforcement. Our program will construct an environment that encourages residents to develop increased confidence and skills in well-child care. System level organization will provide the resident with clear activities and tasks, aiding in the participants’ capability to learn skills in well-child care. Our program is based on observational learning, involving the relationship between an attending physician and a resident. A resident’s gain of

skills and confidence in well-child care will be reinforced by an attending physician's review and by repeated opportunities to practice such skills.

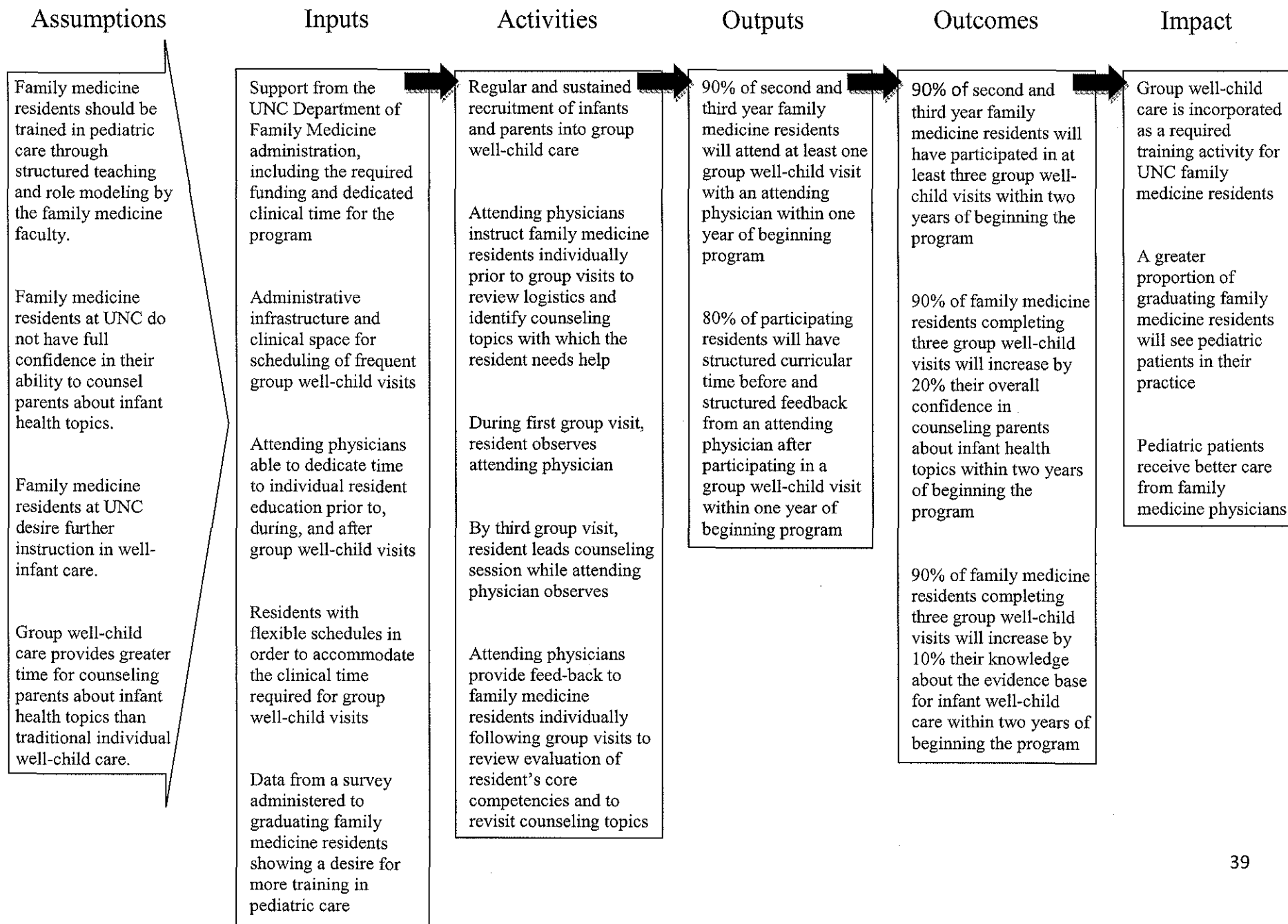
Our program is educational in nature and thus is influenced by educational theories as well. In particular, the progressive educational theory is applied in our program by teaching well-child care through resident participation in activities of well-child care. This model of education emphasizes the need for experiential learning.

*Community Level:* Community level theories primarily apply to the process construction of our program and to the potential for implementation at alternate sites. The primary theory applicable to our program is the Diffusion of Innovations Theory. In order to implement our theory both at UNC and at potential other residency sites, our program must show a relative advantage to those educational programs currently in place. Our program is constructed to evaluate the system requirements needed to implement this program. This information will determine the compatibility and complexity of the program for implementation elsewhere. Straightforward assessment tools incorporated into the program allow one to clearly and easily observe the effect of this program on residents' confidence and knowledge in preventive well-child care.

### **Logic Model**

The logic model for this plan (Figure 1) outlines several aspects of the program. First the model identifies the underlying assumptions used to create the program. Next the model shows the general resources required to pursue implementing the program. These resources lead into certain program activities. The model then indicates our expected outputs, followed by outcomes and the overall anticipated impact of the program.

Figure 1: Logic Model for WellBabies Resident Curriculum



## **Program Implementation**

Our implementation plan is structured to include activities that will propel our program toward meeting the goal and objectives laid out above.

### *Scheduling Group Well-Child Visits*

In order to offer enough educational opportunities through group care to family medicine residents, group well-child visits with infants need to be scheduled regularly. Structured recruitment of patients will be pursued through both group and individual prenatal visits at the UNC Department of Family Medicine. In order to schedule enough group visits for each second and third year resident to complete our program, we need to recruit around 100 patients for group well-child care each year. Recruitment will involve informational flyers distributed and discussed during prenatal visits at UNC and follow-up phone calls for scheduling. We will establish a working protocol for scheduling group well-child visits; this task will involve training administrative staff in coordinating patient, physician, and resident schedules along with space resources.

### *Preliminary Training*

Prior to beginning resident education through group well-child care, all participating attending physicians will be informed about the structure of our program and their associated responsibilities. Both second and third year residents will receive information about the program. Second and third year residents will have completed two rotations in pediatric care prior to beginning this program. Initially, residents will be scheduled into group visits based on availability. Participating residents will be provided with a notebook that includes relevant literature, informing the reader of the evidence base for counseling topics and other well-child



health issues. Residents will review this material individually; clarification and discussion of articles and opinions can be pursued during resident and attending physician interactions.

### *Structure of Educational Components*

The educational portion of our program will be conducted through three group well-child visits. The specifics of the schedule and activities to be followed during these visits are presented in Table 3. Prior to the first session, we will create a pre-survey that helps residents and attending physicians identify the counseling topics in which the resident needs the most instruction. These topics will be reviewed during individual sessions with the attending physician and resident both before and after group well-child visits.

### **Sustainability**

Following evaluation to establish the benefit of our model for resident education, we hope to incorporate this program into the family medicine resident curriculum and require participation of all UNC family medicine residents during either the second or third year of residency.

Establishing this program as a part of family medicine resident curriculum would continue as long as the program provides an effective educational opportunity for the residents.

Incorporation into the curriculum will require structured continual recruitment of potential patients and an established protocol for scheduling group well-child visits. We will incorporate technological resources to assist in the scheduling process. If incorporated into the resident curriculum, funding is ensured through the UNC Department of Family Medicine for administrative staff to coordinate scheduling and training for group well-child visits. Dr. Cristen Page is the faculty sponsor and adviser for this program and also serves as the Associate Director of the residency program in the Department of Family Medicine at UNC. Her leadership and influence in resident education at UNC will be vital for the sustainability of this program.

**Table 3:** Outline of activities and responsibilities of attending physician and resident for each group well-child visit

	<b>Before Group (30min)</b>	<b>During Group (1.75hrs)</b>	<b>After Group (30 min)</b>
<b>Group Visit 1</b>	<ul style="list-style-type: none"> <li>- Resident completes pre-survey</li> <li>- Attending reviews pre-survey to identify individual educational goals based on confidence level in counseling topics; specifically, attending should identify three topic areas to focus on with resident</li> <li>- Attending reviews structure of group visit with resident</li> </ul>	<ul style="list-style-type: none"> <li>- Attending facilitates and guides group format</li> <li>- Attending models counseling skills</li> <li>- Resident observes attending during counseling session</li> <li>- Resident assists during individual exams</li> </ul>	<ul style="list-style-type: none"> <li>- Attending conducts debrief session with resident, reviewing events of group visit</li> <li>- Attending discusses one of the three identified topic areas, addressing evidence base and strategies for conveying information to parents</li> </ul>
<b>Group Visit 2</b>	<ul style="list-style-type: none"> <li>- Attending physician follows up on resident experience with first group visit</li> <li>- Attending reviews information about first topic</li> <li>- Attending and resident discuss plan for group visit</li> </ul>	<ul style="list-style-type: none"> <li>- Attending facilitates majority of group session, allowing some opportunities for resident to practice counseling skills</li> <li>- Attending models counseling skills</li> <li>- Resident observes attending during counseling session and participates at appropriate opportunities</li> <li>- Resident assists during individual exams and developmental assessment</li> </ul>	<ul style="list-style-type: none"> <li>- Attending conducts debrief session with resident, reviewing events of group visit</li> <li>- Attending discusses with resident the second of the three identified topic areas, addressing evidence base and strategies for conveying information to parents</li> <li>- Attending offers resident feedback and constructive criticism about any counseling resident performed during group visit</li> </ul>
<b>Group Visit 3</b>	<ul style="list-style-type: none"> <li>- Attending physician follows up on resident experience with second group visit</li> <li>- Attending reviews information about second topic</li> <li>- Attending presents evidence base and counseling strategies for the third topic</li> <li>- Attending and resident discuss plan for group visit</li> </ul>	<ul style="list-style-type: none"> <li>- Resident facilitates majority of group session, particularly counseling and anticipatory guidance sections</li> <li>- Attending observes resident during counseling portions</li> <li>- Resident facilitates individual exams and developmental assessment, with appropriate assistance from attending</li> </ul>	<ul style="list-style-type: none"> <li>- Attending conducts debrief session with resident, reviewing events of group visit</li> <li>- Attending briefly reviews the three identified topics with the resident</li> <li>- Attending offers resident feedback and constructive criticism about counseling session during group visit</li> <li>- Resident and attending complete a post-survey for evaluation purposes</li> </ul>

## **Program Evaluation**

### **Rationale and Approach to Evaluation**

#### *Program Overview*

The WellBabies Resident Curriculum is a program targeted to family medicine residents at UNC. Specifically, this program provides a structured curriculum in well-child preventive care, an aspect of education that is currently insufficient in family medicine training at UNC. The WellBabies program relies on role-modeling by and feedback from attending physicians, as well as printed materials regarding the evidence base for well-child care. The activities of this program are designed to assist in increasing resident physicians' confidence and knowledge in preventive pediatric care.

#### *Rationale for Evaluation*

Given the busy schedules of both resident and attending physicians, it is important to ensure that all curriculum activities are beneficial to the training of residents. The CDC offers guidance in identifying the purpose of evaluation. The CDC suggests that evaluation serve to monitor progress towards goals, to aid in gaining additional support and funding, and to ensure the continuation of effective programs.<sup>31</sup> Evaluation of the progress of our program will allow us to improve the program to provide benefit in the most efficient manner. Tracking the outcomes of the program will offer evidence to assist in decisions about the usefulness and sustainability of this program based on approval by the administration of the Department of Family Medicine. Finally, following long-term outcomes will provide concrete data on the program's effectiveness and for publishing the structure and resulting benefits of the WellBabies Resident Curriculum.

### *Role of the Evaluator*

It is important to identify who will lead the evaluation process prior to planning specific evaluation activities. Dr. Cristen Page will serve as the primary program evaluator, providing insight into the internal logistics and content of the program. Given her position of leadership in the Department of Family Medicine at UNC, Dr. Page also provides legitimacy of the evaluation to participating residents and attending physicians. Additional evaluation support will be sought from an external consultant who can offer a fresh perspective. Moreover, in selecting an external evaluation consultant, we can include someone with expertise in evaluation. In addition to the specific advantages the internal evaluator and external consultant will provide to the evaluation process, both need certain skills to ensure a successful evaluation. These skills include the ability to communicate well with the evaluation team, the capability of negotiating among perspectives to develop a reasonable plan, flexibility in problem solving, and a desire to pursue an accurate representation of the effect of this program.

### *Stakeholder Involvement*

In order to develop a relevant evaluation plan, we will involve stakeholders in both the development and execution of the evaluation. These stakeholders include family medicine residents and attending physicians at UNC, the UNC Department of Family Medicine administration, the UNC School of Medicine, the Accreditation Council on Graduate Medical Education, and the American Board of Family Medicine. The involvement of these stakeholders will establish support for the program and will ensure that the results of the evaluation will be adequate justification for initiating the program at additional sites if appropriate.

Stakeholders could find the following questions important, depending on their level of involvement with the program. How much time is required to participate in the program? How much benefit is received for the amount of participatory time? What resources are required to

implement this program? What improvements are seen in family medicine resident confidence and knowledge in well-child preventive care? How can this program best be incorporated into other resident training?

### *Challenges*

In developing and implementing an evaluation plan, we could encounter several challenges. First of all, gathering confidence, knowledge, and satisfaction information from residents and attending physicians will require additional time outside of the program activities. Given the busy schedules of physicians, finding time to dedicate to these activities could be difficult. In order to follow long-term outcomes associated with our program, we will need to track graduating resident physicians for extended periods of time. Also, this long-term evaluation will require continued support for the program from the UNC Department of Family Medicine or other grant sources. Finally, attributing changes in the long-term outcomes exclusively to our program will be difficult given the changing environment in which physicians both learn and practice medicine.

## **Evaluation Study Design and Methods**

### *Study Design*

In determining the design of our evaluation, we must weigh the needs to document the outcome, assess the outcome, and evaluate the outcome. Each level of evaluation provides important information about program implementation and effect. At a basic level, we need to indicate whether our program has satisfied our expected outcomes and objectives. Further design strategies can help to dissect whether any change is due primarily to participation in the program, establishing a stronger correlation between the program and the outcomes.<sup>32</sup>

Given time and population constraints, our primary approach to evaluation will be through observational and quasi-experimental designs. Since we are planning this program evaluation prior to program implementation, we will be able to gather data prospectively. Quasi-experimental design is appropriate for an educational program, as this design allays concerns about diversity of baseline variables and relieves pressure to ensure commonality of experiences for experimental or control groups. The goal of education is to encourage change and improvement in individuals or populations. As such, a quasi-experimental design with pre- and post-testing is aptly situated to examine such outcomes. Although program participation based on random allocation would provide the best data on the relationship between our program and outcomes, our limited study population further discourages using this design.

The implementation evaluation will be based entirely on observational data, consisting of both quantitative and qualitative data. Observational data will provide us with a perspective of how our program has been implemented and how it has affected the outcomes. The outcome evaluation will use a quasi-experimental design, which will assist us in examining the potential relationship between our program and the outcomes and impact. Specifically, we will use both a one group pre- and post-test model and a two group cohort design.

### *Study Methods*

In order to gather a breadth of information about the implementation and effect of the WellBabies Resident Curriculum, we will employ both qualitative and quantitative data for our evaluation. We believe that using both types of data will strengthen our study design and allow for accurate conclusions to be drawn from the data.

Qualitative data will come from a variety of sources. We will use personal interviews and surveys with open-ended questions to solicit the post-program experiences and opinions of

program participants and administrators. This data will provide information about how our program contributed to the outcomes and about challenges encountered during the program.

Quantitative data will be used to assess both the implementation and outcomes of our program. Document review of schedule and activity logs will determine the use of program activities. Pre- and post-test confidence and knowledge tests will be administered to each participating resident, allowing us to examine changes in these areas following program participation. The confidence test will be based on a Likert scale. The knowledge test will consist of multiple choice questions about the evidence base for pediatric prevention topics. Questions will be adapted from recent national exams. Additional quantitative data will come from closed questions on individual surveys to residents and attending physicians. Secondary data will be gathered from a national cohort of family medicine physicians, matched to our study group on residency training years, for program impact determination.

In order to ensure accurate data, we will employ both quantitative and qualitative data to answer a given evaluation question when possible. Given the busy schedules of both resident and attending physicians, we decided a survey would be the most acceptable form of data collection. All program participants are literate and are in close contact with the program director, which should assist in increasing the response rate on the survey.

## Evaluation Planning Tables

### *Short-term Objective 1*

Within one year of implementing the program, 90% of second and third year family medicine residents at UNC will have attended at least one group well-child visit with an attending physician.

<b>Evaluation Questions</b>	<b>Participant</b>	<b>Evaluation Method</b>
<b>What percentage of second and third year family medicine residents at UNC attended a group well-child visit during the first year of the program?</b>	Program Director; Administrative Director	Document Review: Schedule/Activity Log
<b>How often were well-child group visits scheduled in the Department of Family Medicine at UNC?</b>	Administrative Director	Document Review: Schedule/Activity Log
<b>What methods were used to recruit parents for group well-child care?</b>	Administrative Director	Individual Interview: Open-ended Questions
<b>What difficulties prevented scheduling of well-child group visits? How were challenged addressed? How can they be improved?</b>	Administrative Director	Individual Interview: Open-ended Questions
<b>For what percentage of well-child group visits was a resident scheduled to attend?</b>	Program Director; Administrative Director	Document Review: Schedule/Activity Log
<b>What barriers or difficulties did residents and attending physicians encounter in scheduling time for well-child group visits? How were challenges addressed? How can they be improved</b>	Resident Physicians; Attending Physicians	Individual Post-Survey: Open-ended Questions



*Short-term Objective 2*

Within one year of implementing the program, 80% of participating residents will have structured curricular time before and structured feedback from an attending physician after participating in a group well-child visit.

<b>Evaluation Questions</b>	<b>Participant</b>	<b>Evaluation Method</b>
<b>How many participating attending physicians received formal instruction on their role and responsibilities in this program?</b>	Program Director; Attending Physicians	Document Review: Activity Log  Individual Post-Survey: Closed Question
<b>How many residents received a notebook with information about the evidence base for preventive pediatric care?</b>	Program Director; Administrative Director; Resident Physicians	Document Review: Activity Log  Individual Post-Survey: Closed Question
<b>For what percentage of group visits did participating residents have 30 minutes of individual discussion with an attending physician prior to the visit?</b>	Resident Physicians, Attending Physicians, Administrative Director	Document Review: Schedule/Activity Log  Individual Post-Survey: Closed Questions
<b>For what percentage of group visits did participating residents have 30 minutes of individual discussion with an attending physician following the visit?</b>	Resident Physicians; Attending Physicians; Administrative Director	Document Review: Schedule/Activity Log  Individual Post-Survey: Closed Questions
<b>Prior to the first group visit, how many residents completed a pre-survey for topic identification?</b>	Program Director	Document Review: Activity Log
<b>Prior to the first group visit, how many residents identified three topic areas for focus with an attending physician?</b>	Resident Physicians, Program Director	Document Review: Activity Log  Individual Post-Survey: Closed Questions and Open-Ended Questions
<b>Following the third group visit, how many residents received evaluation from attending physician on counseling skills?</b>	Resident Physicians	Individual Post-Survey: Closed Questions
<b>What barriers or difficulties did residents and attending physicians encounter in scheduling time for individual instruction? How were challenges addressed? How can they be improved?</b>	Resident Physicians; Attending Physicians	Individual Post-Survey: Open-ended Questions

*Short-term Objective 3*

Within two years of implementing the program, 90% of second and third year family medicine residents at UNC will have participated in at least three group well-child visit.

<b>Evaluation Questions</b>	<b>Participant</b>	<b>Evaluation Method</b>
<b>How many second and third year family medicine residents at UNC have attended at least three group well-child visits?</b>	Program Director; Administrative Director	Document Review: Schedule/Activity Log
<b>How many participating residents led the counseling session by the third group visit?</b>	Resident Physicians, Attending Physicians	Individual Post-Survey: Closed Questions and Open-ended Questions
<b>How many residents participated in more than three well-child group visits?</b>	Program Director; Administrative Director	Document Review: Schedule/Activity Log
<b>Was the structure of didactic teaching coupled with modeling satisfactory to residents? How can this activity be improved?</b>	Resident Physicians	Individual Post-Survey: Closed Questions and Open-ended Questions
<b>Was the discussion, modeling, and evaluation methods for teaching satisfactory to attending physicians? How can this activity be improved?</b>	Attending Physicians	Individual Post-Survey: Closed Questions and Open-ended Questions

*Short-term Objective 4*

Within two years of implementing the program, 90% of family medicine residents completing three group well-child visits will increase by 20% their overall confidence in counseling parents about infant health topics.

<b>Evaluation Questions</b>	<b>Participant</b>	<b>Evaluation Method</b>
<b>How many participating residents increased their confidence in counseling parents after three group visits?</b>	Resident Physicians	Individual Pre/Post Confidence Test: Likert Scale  Individual Post-Survey: Open-ended Questions
<b>By how much did participating resident increase their confidence?</b>	Resident Physicians	Individual Pre/Post Confidence Test: Likert Scale
<b>Did participating resident confidence increase in the three individually identified topic areas?</b>	Resident Physicians	Individual Pre/Post Confidence Test: Likert Scale

*Short-term Objective 5*

Within two years of implementing the program, 90% of family medicine residents completing three group well-child visits will increase by 10% their knowledge about the evidence base for infant well-child care.

<b>Evaluation Questions</b>	<b>Participant</b>	<b>Evaluation Method</b>
<b>How many participating residents increased in knowledge about the evidence for preventive pediatric care?</b>	Resident Physicians	Individual Pre/Post Test: Closed Multiple Choice Knowledge Questions
<b>What aspect of the program did residents find most helpful in increasing their knowledge of infant well-child care?</b>	Resident Physicians	Individual Post-Survey: Open-ended Questions

*Long-term Objective 1*

Within five years of implementing the program, all (100%) graduating family medicine residents will have participated in three group well-child visits.

<b>Evaluation Questions</b>	<b>Participant</b>	<b>Evaluation Method</b>
<b>How often are group well-child visits scheduled at the Department of Family Medicine at UNC?</b>	Administrative Director	Document Review: Schedule/Activity Log
<b>What administrative changes have assisted in the scheduling of group well-child visits?</b>	Administrative Director	Individual Interview: Open-ended Questions
<b>What percentage of graduating family medicine residents attended at least three group well-child visits?</b>	Program Director; Administrative Director	Document Review: Schedule/Activity Log
<b>What structural changes have occurred to incorporate this program into resident curriculum in the Department of Family Medicine at UNC?</b>	Program Director; Administrative Director	Individual Interview: Open-ended Questions
<b>What barriers or difficulties did residents and attending physicians encounter in scheduling time for well-child group visits? How were these challenges addressed? How can they be improved?</b>	Resident Physicians; Attending Physicians	Individual Post-Survey: Open-ended Questions

### Long-term Objective 2

Within five years of implementing the program, participants in this program will see more pediatric patients in their medical practices compared to a matched cohort.

<b>Evaluation Questions</b>	<b>Participant</b>	<b>Evaluation Method</b>
<b>What percentage of pediatric patients did program participants see in their medical practices?</b>	Program Director; Program Participants (Prior Resident Physicians)	Document Review: UNC documents on current practice  Individual Post-Survey: Closed Questions and Open-ended Questions
<b>How does this percentage of pediatric patients compare to that seen in the matched cohort?</b>	Program Director	Document Review: UNC documents on current practice, State documents on current practice

### Dissemination Plans

Dissemination of the evaluation results is important to ensure improvement of the program and to share knowledge about the effectiveness of the program. Process level evaluation data will be analyzed regularly and formatted into brief reports to be distributed to the program team. This team will then use these reports to make alterations to the program to improve implementation of the program activities.

Results from both process and outcome evaluation activities will be formatted into longer reports for the residency directors in the Department of Family Medicine at UNC. These reports will be used to convey the objectives and structure of the program, as well as the evaluation plan and ensuing results. The report will also offer recommendations for further program implementation and changes. This information will be reviewed during regular meetings regarding the structure of family medicine resident training at UNC. The report will be taken

into account with all the other training activities required of residents to determine the value of continuing the program and to identify potential beneficial changes to the program.

The evaluation results will also be presented during oral presentations to family medicine residents and attending physicians. These presentations will review baseline data about resident knowledge and confidence in preventive well-child care. Evaluation data will be presented to indicate the effectiveness of the program in influencing resident knowledge and confidence. Process recommendations will be presented to indicate how the program will be improved for future participants.

The final method of dissemination will be outside UNC, to the larger field of family medicine. The structure of this program has already been presented at a national conference for physicians in family medicine by Dr. Cristen Page. We will pursue opportunities to present the program structure again, coupled with the evaluation results. Initial presentations will focus on the effectiveness of this program. Subsequent presentations can be given to elaborate on creating and establishing this program in new settings, if desired and needed. We will also pursue publishing our material in the journal *Family Medicine*. This journal has expressed interest in our program and subsequent evaluation, as it potentially could assist other residency programs in enhancing training in pediatric care. Such an article will outline the objectives and structure of our program, as well as presenting the evaluation plan and results. Our experience in group well-child care can assist other programs in establishing a similar program if our evaluation indicates that our curriculum in preventive pediatric care offers benefits in resident training.

## Discussion

As a medical specialty, family medicine strives to provide comprehensive care to both individuals and populations. This includes caring for healthy infants through providing patient education, health promotion, and prevention counseling. Given the large percentage of family medicine physicians who see pediatric patients, adequate training in this area is necessary.

Although the requirements for the family medicine residency specified by the Residency Review Committee support such training, the mode of education is under the discretion of individual programs. Continual development, evaluation, and improvement of curriculum programs are needed to ensure that training adequately reflects the changing environment of the family medicine practice and the broadening evidence base for medical care.

The WellBabies Resident Curriculum was developed in response to an expressed need for additional resident training in well-child care in the Department of Family Medicine at UNC. This curriculum is a program plan for focused training in preventive pediatric care for family medicine residents. Specifically, this program aims to enhance residents' ability to counsel parents about infant health topics. This goal is pursued primarily through role-modeling of communication skills by attending physicians and observation of residents with focused feedback. Through individual didactic sessions with an attending physician, residents will have the opportunity to discuss the evidence base for preventive well-child care as well as receive recommendations for improved counseling skills.

Despite prior work in training programs in pediatric care, the WellBabies Resident Curriculum uses a unique environment for the education of residents. This program takes advantage of the increased time dedicated to prevention counseling in group well-child visits. Thus, residents are able to both observe and practice leading discussions about a greater number

of prevention topics during each session. Group visits have previously been used for education of both medical students and residents in chronic disease care. After an extensive literature search, it appears that the WellBabies Resident Curriculum is the first program to use the group visit model to educate residents about well-child care.

Published work about training family medicine physicians in pediatric care is somewhat sparse. Although every residency program must have an established curriculum for this area, not much of this information is published for use by the broad medical community. Most published programs focus on prevention training for pediatric residents. The results from these programs indicate that curricula incorporating discussion of evidence, resident practice of skills, and feedback from experienced physicians can improve resident ability in specific pediatric prevention areas. By using the group visit model of care, we hope to maximize the time residents have to practice counseling skills, followed by feedback from an attending physician.

Although the WellBabies Resident Curriculum has not yet been fully implemented, several residents already have participated in well-child group visits with attending physicians. Although these residents did not complete all aspects of the program described in this paper, their experience could offer valuable information for the implementation of this program. An evaluation is currently being conducted, soliciting the opinions and experiences of these residents and attending physicians. The program proposal will be revised as needed to address specific challenges and barriers discovered during this evaluation process. Also during this time, organized recruitment of potential patients will begin in order to establish the administrative aspects of the program. The WellBabies Resident Curriculum should be ready for full implementation by the Fall of 2010.

## **Acknowledgments**

Dr. Cristen Page serves as the director of this program. She is credited with the original idea for the program structure and activities. Erin Hoagland is providing valuable organizational advice and labor for the administrative portions of this program. Alfred Reid offers experience and knowledge in qualitative research design and program evaluation. Other faculty members in the Department of Family Medicine have provided informal advice and discussion throughout the process of formulating this program and evaluation plan. Pam Dickens offered suggestions and revisions for the program plan portion of this paper. Diane Calleson was instrumental in the evaluation design. For each of these contributions, I am immensely grateful.



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## Appendices

### **Appendix A:** Specific objectives from Healthy People 2010 addressed by the WellBabies Resident Curriculum<sup>26</sup>

- 1.3 Increase the proportion of persons appropriately counseled about health behaviors.
- 1.7 (Developmental) Increase the proportion of schools of medicine, schools of nursing, and other health professional training schools whose basic curriculum for health care providers includes the core competencies in health promotion and disease prevention.
- 7.7 (Developmental) Increase the proportion of health care organizations that provide patient and family education.
- 7.8 (Developmental) Increase the proportion of patients who report that they are satisfied with the patient education they receive from their health care organization.
- 11.3 (Developmental) Increase the proportion of health communication activities that include research and evaluation.
- 11.6 (Developmental) Increase the proportion of persons who report that their health care providers have satisfactory communication skills.

**Appendix B:** Specific goals from Healthy Carolinians 2010 addressed by the WellBabies Resident Curriculum<sup>28</sup>

3. Promote access to preventive health services
5. Foster positive and supportive living and working conditions in our communities.
6. Support individuals to develop the capacities and skills to achieve healthy living.

**Appendix C: Program and Evaluation Pre-Survey of Confidence for Residents\***  
 \*originally created by Dr. Cristen Page

1. How confident are you in your overall ability to provide evidence based, supportive counseling to parents about common concerns of infancy? (Choose number representative of your overall confidence)

Not confident            1            2            3            4            5            Very Confident

2. How confident are you in your ability to counsel parents around the following topics:  
 (Choose number representative of your overall confidence)

Breastfeeding Challenges

Not confident            1            2            3            4            5            Very Confident

Nutritional supplements (vitamins, fluoride, etc)

Not confident            1            2            3            4            5            Very Confident

Introduction of Solids

Not confident            1            2            3            4            5            Very Confident

Constipation

Not confident            1            2            3            4            5            Very Confident

Colic

Not confident            1            2            3            4            5            Very Confident

Spitting up/GERD

Not confident            1            2            3            4            5            Very Confident

Pacifier Use

Not confident            1            2            3            4            5            Very Confident

Sleeping (co-sleeping, back, etc)

Not confident            1            2            3            4            5            Very Confident

Common Skin Problems (acne, milia, toxicum, eczema, diaper rash, etc)

Not confident            1            2            3            4            5            Very Confident

Development

Not confident            1            2            3            4            5            Very Confident

Infant Safety

Not confident            1            2            3            4            5            Very Confident

Immunizations (benefits, side effects, etc)

Not confident            1            2            3            4            5            Very Confident

3. Do you have children of your own? (Circle one)

Yes

No

4. Besides development, please list three of the topics listed above that you would like to focus on during the well-child group visits.

1.

2.

3.

**Appendix D: Evaluation Post-Survey of Confidence, Satisfaction, and Barriers for Residents\***  
 \*originally created by Dr. Cristen Page

1. How confident are you in your overall ability to provide evidence based, supportive counseling to parents about common concerns of infancy? (Choose number representative of your overall confidence)

Not confident      1            2            3            4            5            Very Confident

2. How confident are you in your ability to counsel parents around the following topics:  
 (Choose number representative of your overall confidence)

Breastfeeding Challenges

Not confident      1            2            3            4            5            Very Confident

Nutritional supplements (vitamins, fluoride, etc)

Not confident      1            2            3            4            5            Very Confident

Introduction of Solids

Not confident      1            2            3            4            5            Very Confident

Constipation

Not confident      1            2            3            4            5            Very Confident

Colic

Not confident      1            2            3            4            5            Very Confident

Spitting up/GERD

Not confident      1            2            3            4            5            Very Confident

Pacifier Use

Not confident      1            2            3            4            5            Very Confident

Sleeping (co-sleeping, back, etc)

Not confident      1            2            3            4            5            Very Confident

Common Skin Problems (acne, milia, toxicum, eczema, diaper rash, etc)

Not confident      1            2            3            4            5            Very Confident

Development

Not confident      1            2            3            4            5            Very Confident

Infant Safety

Not confident      1            2            3            4            5            Very Confident

Immunizations (benefits, side effects, etc)

Not confident      1            2            3            4            5            Very Confident



3. Do you have children of your own? (Circle one)

Yes                      No

4. Did you identify three topic focus areas in pediatric prevention prior to starting your first group well-child visit?

Yes                      No

If so, please list the three topics listed above that you identified as focus areas prior to your first group well-child visit.

1.

2.

3.

5. Did you receive a notebook with information about the evidence base for preventive pediatric care prior to your first group well-child visit?

6. What difficulties did you have in scheduling attendance at a group well-child visit?

What about difficulties scheduling time for individual instruction with the attending physician?

7. How were these difficulties with scheduling addressed by the program administration?

8. What things would you change to make scheduling time for program participation?

9. For each of the below group well-child visits, did you have 30 minutes of individual discussion with the attending physician BEFORE the visit?

First group well-child visit?	Yes	No
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Second group well-child visit?	Yes	No
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Third group well-child visit?	Yes	No
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10. For each of the below group well-child visits, did you have 30 minutes of individual discussion with the attending physician FOLLOWING the visit?

First group well-child visit?	Yes	No
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Second group well-child visit?	Yes	No
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Third group well-child visit?	Yes	No
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11. When did you begin leading the counseling portion of the group visit?

12. Did you lead the entire counseling portion of the group visit during your third group well-child visit?

Yes                      No

13. After your third group well-child visit, did you receive evaluation from the attending physician on counseling skills?

Yes                      No

14. How satisfied were you with the teaching by the attending physicians during your participation with group well-child visit?  
Not Satisfied      1            2            3            4            5            Very Satisfied

15. What aspects of the program were most effective at teaching counseling skills?

16. What parts of the program would you change to better the teaching environment?

17. What portion of the program was most helpful for enhancing your knowledge of well-infant topics?

## Appendix E: Evaluation Post-Survey for Attending Physicians

1. Did you receive instruction about your role and responsibilities in the program?
2. What difficulties did you encounter in scheduling your attendance at group well-child visits?  
  
What barriers did you find in scheduling time for individual teaching sessions with the resident both prior to and after the group visit?
3. How were challenges in scheduling handled by the program administration?
4. In what ways could scheduling be improved?
5. Were you able to dedicate 30 minutes to discussion with the resident BEFORE each group visit?
6. Were you able to dedicate 30 minutes to discussion and feedback with the resident AFTER each group visit?
7. Were you satisfied with the discussion, role-modeling, and resident evaluation methods for teaching counseling skills?  
Yes                      No
8. How can the teaching activities in the program be improved?