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## Quality Improvement in the Department of Family and Community Medicine at the University of Kentucky

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The document mentioned above has been reviewed and accepted by the student's advisor, on behalf of the advisory committee, and by the Director of Graduate Studies (DGS), on behalf of the program; we verify that this is the final, approved version of the student's capstone including all changes required by the advisory committee. The undersigned agree to abide by the statements above.

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**Quality Improvement in the Department of Family and Community Medicine at the  
University of Kentucky  
Capstone Project Paper**

A paper submitted in partial fulfillment of the  
Requirements for the degree of  
Master of Public Health in the  
University of Kentucky College of Public Health

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San Jose, CA, USA

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**Abstract**

The purpose of this capstone project is to analyze the quality improvement data that was collected in order to increase the pediatric population at the University of Kentucky Department of Family and Community Medicine clinic at Turfland. There were three different patient populations that were surveyed: reproductive aged women between 18 and 40, parents of the pediatric population that the clinic saw between July 2014 and June 2015, and pregnant women between July 2014 and June 2015. The results show that continuity of care and not being able to see the provider of choice were some of the weaknesses that were brought up.

## **Executive Summary**

Background: This capstone report presents the analysis of data that were collected as part of a quality improvement project at the University of Kentucky Department of Family and Community Medicine. (DFCM). The survey was designed to guide efforts to increase the number of newborn and pediatric patients at the DFCM Turfland Clinic, for the educational training purposes of family medicine residents and medical students. In order to increase the newborn and pediatric patient population, it is vital to know the areas where Turfland Clinic is succeeding, and what areas need improvement. Increasing the patient population is necessary to address the regulatory requirement for the family and community medicine residency program to retain its accreditation status. In addition, this project meets one of the essential public health services of evaluating the “effectiveness, accessibility, and quality of personal and population-based health services.”

Objective: The objective of this capstone project was to identify the areas of practice that the University of Kentucky Department of Family and Community Medicine can improve in order to attract more newborn and pediatric patients to the clinic.

Methods: Three sets of patient populations within the University of Kentucky Department of Family and Community Medicine were surveyed: women who were pregnant or had delivered between July 2014 and June 2015, women of reproductive age between 18 and 40, and parents of the pediatric population between 0-17 years who visited our office between July 2014 and June 2015. The surveys were sent via U.S. Postal Service mail to patients with a cover letter explaining the purpose of the survey, in addition to a business return envelope, with the postage paid for by the DFCM, so that the patient could return the survey in a confidential manner. Statistical tests, such as chi-square tests and t-tests, were conducted using SPSS.

Results: The age range for the reproductive and pregnant women populations ranged from 20-41 (mean=32.8 years). The age range for the pediatric population was 0.25 years to 17 years (mean n=8.9 years). The parents of the pediatric sample rated being able to make an appointment for the entire family in one place higher than the adult sample, with a significance value of 0.003. The pediatric sample also rated being to contact the provider after hours higher than the adult population, with a statistical significance of 0.02. Though the mean rating for the overall care at the UK Department of Family and Community Medicine as a 3.91, there were areas that patients brought up as areas that we could improve. One such area was continuity of care and being able to get in to see the provider that the patient wishes, but also in a timely manner. Part of this issue was that the residents often left after completing their residencies, meaning that patients once again had to go through the process of building rapport with a provider.

Conclusions: Lengthening specific appointment times and making patients more aware of the fact that they can reach their provider after hours through their patient portal, would facilitate better communication between patient and provider. Patients also brought up the issue of continuity of care since residents tended to leave after completing their residency. One way this issue can be addressed is by the UK FCM department having incentives that would encourage the residents to stay after finishing their residency. This would not only address the care continuity, the department would be able to expand their pediatric practice since there would be more providers to handle the influx of patients. And of course, having residents trained in OB or Maternal and Child Care is important not only for providing care for the patients at UK Family and Community Medicine, but to reverse the declining trend of family medicine physicians providing prenatal and children's care.

Key words: Family and Community Medicine, Quality Improvement, Pediatric, Reproductive, Pregnant

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### Abbreviations

AAFP= American Academy of Family Practice

DFCM= Department of Family and Community Medicine

FCMC= Family & Community Medicine Clinic

OB= Obstetrics

PDCA= Plan Do Check Act

QI= Quality Improvement

UK= University of Kentucky



## Introduction

The purpose of this capstone report is to present the analysis of the data that was collected as part of a quality improvement project at the University of Kentucky Department of Family and Community Medicine (DFCM). The American Academy of Family Practice (AAFP) defines quality improvement “a systematic, formal approach to the analysis of practice performance and efforts to improve performance (AAFP, Basics of Quality Improvement).” This study met two of the basic elements of quality improvement as defined by the AAFP: “determining and prioritizing areas for improvement” and “collecting and analyzing data.”

The survey was written and distributed as part of the author’s internship, and was designed to guide efforts to increase the number of newborn and pediatric patients at the DFCM Turfland Clinic. In order to increase the aforementioned patient population, it is vital to know the areas where Turfland Clinic is doing well, and what areas of the clinic needs improvement. By coming up with a plan to address the areas that need improvement, the DFCM at Turfland seeks to increase the desired patient population. This increase in patient population is necessary to address the regulatory requirement for the family and community medicine residency program to retain its accreditation status. In addition, this project meets one of the essential public health services of evaluating the “effectiveness, accessibility, and quality of personal and population-based health services (Centers for Disease Control and Prevention).”

For the department to grow and improve, it is necessary to understand what is being done well and what needs to be improved. In his article “Evaluating the quality of medical care” (1966), Avedis Donabedian puts forth three approaches for assessment. The first assessment is the outcome of medical care, such as perinatal mortality and surgical fatality rates. The second is inspecting “the process of care itself rather than its outcomes” (169), and the last assessment

approach is to look at the environment where the process of care occurs “and the instrumentalities of which it is the product” (169-170). The survey that was distributed focuses more on the second and third points that Donabedian puts forth, since the outcome of care is dependent on the process of care, and environment it takes place in.

### **Literature Review**

Quality improvement (QI) is a process used by many other industries to try to improve the efficiency of their organization. However, there has been a lack of literature regarding the use of QI in public health (Riley et al., 2010). Riley and colleagues discuss how a subcommittee of a group of organizations that the Centers for Disease Control and Prevention, and the Robert Wood Johnson Foundation supported, put forth the following definition after doing a literature review:

“Quality improvement in public health is the use of a deliberate and defined improvement process, such as Plan-Do-Check-Act, which is focused on activities that are responsive to community needs and improving population health. It refers to a continuous and ongoing effort to achieve measurable improvements in the efficiency, effectiveness, performance, accountability, outcomes, and other indicators of quality in services or process which achieve equity and improve the health of the community.” (8)

According to the American Society for Quality, the Plan-Do-Check-Act has the following steps: 1. Plan. Recognize an opportunity and plan a change. 2. Do. Test the change. Carry out a small scale study. 3. Check. Review the test, analyze the results, and identify what you have learnt. 4. Act. Take action based on what you learned in the study step: If the change did not work, go through the cycle again with a different plan. If you were successful, incorporate what you learned from the test into wider changes. Use what you learned to plan new improvements, beginning the cycle again” (Plan-Do-Check-Act (PDCA) Cycle). By initiating this project, the UK DFCM has set in motion the ability to carry out the Plan-Do-Check-Act. In order to carry out this quality improvement sequence, we must first know what exactly it is the department needs to change in

order to attract more patients; and by conducting this survey and recommendations derived from its results, the UK DFCM will be able to go through the Plan-Do-Check-Act list. It is also important to note that the article by Riley et al. identifies two types of quality improvement- “small qi” and “big qi”. The distinction between the two forms of quality improvement is that small qi refers to project level qi, whereas big qi refers to organizational level qi; this capstone project would fall under small qi.

In his 1988 article titled “The Quality of Care”, Avedis Donabedian builds upon the three categories that can be used to make inferences about the quality of care that he discusses in his 1966 article. These three categories are structure, process and outcome. In his article, structure is defined as the environment in which care happens, and is comprised of material resources, human resources and organizational structure. Donabedian then defines process as “what is actually done in giving and receiving care”, and outcome is defined as “the effects of care on the health status of patients and populations.”

The purpose of this capstone project was to determine how the practice could improve in order to attract more pediatric patients. However, there has been a decline in the amount of prenatal care and deliveries performed by family medicine practitioner. In a journal article published by Cohen and Coco (2009), it seems as if there is a decreasing trend when it comes to family physicians providing prenatal care. The authors noted that according to the American Academy of Family Physicians, 43% of family physician respondents in 1986 indicated that they performed deliveries, which then decreased to 28% in 2006. In their study, the authors analyzed the National Ambulatory Medical Care Survey to determine the prenatal visits provided by family physicians and obstetricians over the course of a nine year period between 1995 and 2004. The results showed that family physicians reduced the availability of prenatal care by almost 50% over the course of

a 10 year period, with reduction in services even greater in rural, non-metropolitan areas. This decrease in the provision of prenatal care has implications not only for family medicine training in the future, but there are health implications associated with this trend, with the declining numbers of family medicine doctors having potentially widespread repercussions regarding the care of children and reproductive aged women.

An article by Page and colleagues (2014) echoed the sentiments stated by Cohen and Coco, as they too noted that the proportion of pediatric visits family physicians have been providing has significantly decreased over the recent past, with the authors hypothesizing the two fold increase in the number of pediatricians over the course of a 25 year period being the biggest factor contributing to this decline. The authors conducted analyses on the patient billing data which showed that over the course of five years from 2000-2005, there was a four percent decline in the number of pediatric visits. Over the course of this same time period, there was a seven percent decline in the number of pediatric visits by resident pediatric physicians. Within the pediatric population, visits for those between the ages of one and four saw the most marked decline. It was ascertained that even though 80% of infants that the service in this article delivered came back to the Family Medicine Center for at least one visit, at 18 months of age, only 37% remained within the practice (121).

This decline in pregnancy care could be due to the costs of professional liability insurance and the impact that delivering children has on the lifestyle for the physician (Chen et al., 2006). Chen and colleagues also describe how there has been a decline in family medicine practitioners, and the authors attempted to understand this decline by surveying two cohorts of graduates (n=428) from the University of Washington Family Medicine Residency Network regarding their current pregnancy care practice patterns. Researchers found that there was a 20% decline in the proportion

of recent family medicine graduates performing deliveries from 2000-2003, and a 17% decline in prenatal care. Their results showed that even though there was no association between declining pregnancy care provisions and caring for children, they did find that “providing hospital care to adults was related to providing pregnancy care in the regression model” (425). The authors suggested that whether or not recent graduates provide pregnancy care may be due factors such as “limitations in scope of practice.” This decline in care by family physicians is a cause for concern in terms of economics, as Sutter and her team (2015) noted that family physicians “...comprehensive care over a lifetime, as well as the ability to provide care with less intervention at a lower cost (459).”

Sutter et al. reaffirmed what Chen et al. stated in their article regarding litigation and a desire for a more stable schedule as some of the factors dissuading family physicians from practicing obstetrics. Sutter et al. aimed to find the characteristics of graduates from family medicine residencies who practiced obstetrics within the first 5 years of graduating. They found that graduates from programs that had a maternal and child health or OB fellowship on site were 2.5 times more likely to continue to practice OB. In the article, the authors describe how they assessed the degree of independence given to residents on routine OB rotations on a scale of 0-10. Within that scale, there were three categories: Low (0-4), Medium (5-7), and High (8-10). It was also reported among program directors that residents who had low autonomy, residents who had medium and high independent were 4.6 and 13.2 times more likely to continue practicing OB (462).

It is also important to note that this study mentioned that other factors likely to predicted continued vaginal deliveries by recent family medicine graduates include: positive obstetrics experiences, interest in procedures, interest in maternity care prior to entering residency, being

female and having a family medicine mentor. In an article by Gibson and Hueston “Recruiting Faculty to Perform Deliveries in Family Medicine Residencies: Results of a Residency Program Survey”, it was discussed how a “lack of role models during residency may lead to fewer residency graduates who perform deliveries, which in turn will exacerbate the existing shortage of faculty, and this may result in a continued spiraling downward of the percentage of family physicians performing deliveries (182).”

However, there are factors that influence family physicians to practice child health. The goal of Makaroff et al. in this article was to “explore demographic and geographic factors associated with family physicians’ provision of care to children.” The researchers found in their preliminary analysis that there was a positive correlation between providing care for children and providing maternity care. A similar finding was made in the article by Cohen & Coco (2009).

## **Methods**

We surveyed a stratified sample of the patient population of UK’s DFCM. We selected three patient groups: women who were pregnant or had delivered between July 2014 and June 2015, women of reproductive age between 18 and 40, and parents of the pediatric population between 0-17 years that visited our office between July 2014 and June 2015. The surveys were sent via postal mail to patients with a cover letter explaining the purpose of the survey, and a business return envelope with prepaid postage, so that the patient could return the survey in a confidential manner. Due to the large sample size, the surveys were sent out in waves, with the cover letter indicating when the survey was due. The respondents were given about two weeks from the date they were mailed out, to return the surveys. We used February 26<sup>th</sup> as the cutoff date for accepting anymore surveys for data entry, in order to be able to have sufficient time to write

this capstone report. However, this meant we had to omit four surveys that arrived after this date. While the reasoning behind using a deadline was to encourage timely responses to the survey, this is in fact a limitation to the survey as it potentially limited the number of responses that we received.

We sent surveys to all 40 women who were pregnant or recently delivered, in order to get the maximum number of responses. Within the women of reproductive age, we originally had a list of 3000 patients that fell into that category; however, we identified a simple random sample and chose only 1300 of those patients, since we would be surveying an equal number of pediatric patients, and we wanted to have as balanced a sample as possible. To choose the 1300 patients out of the 3000, we used a random number generator to randomly select 1300 numbers to select the patients to be surveyed. In the pediatric population, we received a total of 38 survey that were returned back to us due incorrect address. Also, even though we had 1300 pediatric patients in the original sample, we did not send surveys to 11 of those patients due to 8 of those patients having a bad address or an incorrect name on the mailing label. This means that ultimately the number sampled was 1251 patients after subtracting the number of surveys that were returned to sender.

The survey was slightly modified for the three patient groups but overall had very similar questions. The questionnaires consisted of both forced choice and open response questions. The forced choice questions had Likert scale response categories between 1 and 5, where 1 was a poor rating and 5 was the highest rating. For example, a question that was asked on the survey asked patients to rate their experience in being able to schedule an appointment. In this context, 1 would indicate that making an appointment was difficult and 5 would indicate making an appointment was very easy. On another question, we asked respondents what qualities they looked for in a medical clinic for their child. This question had four options with each option having Likert scale

attached to it, and the fifth option being “other” where the respondent could write anything else that they wished for us to know. In this particular situation, 1 referred to “least important”, and 5 referred to “most important”. Yes or no questions were assigned numerical values, with 0=No and 1=Yes. Patients were asked to provide information on their demographics (age, gender, and race), how they found out about the FCMC, why they chose to utilize the FCM clinic, what qualities that they look for in a health care provider, and what areas of the clinic they thought needed improvement. Appendices one through three contain the surveys that were sent out to each of the three groups.

In addition to descriptive statistics, chi-square and t-tests were conducted to determine whether or not the differences in responses between the pediatric and the reproductive/pregnant populations were different. For the quantitative analysis portion, I analyzed the data using SPSS. The open-ended responses were entered verbatim and examined for themes. The project received IRB approval, and both Dr. Jonathan Ballard and I received HIPAA training and CITI training. Dr. Jonathan Ballard is currently the Ambulatory Services Director at the Family and Community Medicine Department, and was my supervisor during the time period that these surveys were being conducted. The surveys distributed were written by me and edited by Dr. Jonathan Ballard.

## **Results**

Of the 40 pregnant/recently delivered patients that were surveyed, only five women returned the survey. Of these five women, one of them also returned the survey for the parent of the pediatric patient, but this was to be expected since there is between the three populations. For the pediatric group, we received 57 responses out of the 1289 we sent, leading to a response rate of 4.4%. In the reproductive age population, out of the 1300 surveys we sent out, we received 69



responses, which is a response rate of 5.3%. This low response rate is a limitation of the study, since it can bias the results one way or another. For the purposes of analysis, we combined the pregnant population with the reproductive age population. This is due to the pregnant women population receiving only 5 responses which would skew the results, and since many of the questions overlapped between the two populations, we decided that it would not impact the results significantly. In the pediatric sample, we received a total of 57 responses, however some of the respondents replied to the survey for multiple children, the total number of children in this sample came out to 65. For the purposes of analyzing the age, gender and racial make-up of the pediatric sample, we will be using 67 as the denominator. For the remainder of the quantitative analysis, we will be using 57 as the denominator since questions such as “How did you hear about our clinic?” would apply to all of the children for whom the survey was filled out for by their parent or guardian.

When we listed a series of potential patient experiences at the clinic and respondents were asked to rate some of their experiences, some of the respondents did not rate all of the experience that were listed. Part of the reason for this may have been due to confusing wording of the question where they were asked to rate their positive experiences. This could have led to the respondents omitting their answers for some of the experiences, either because they did not have a positive experience for that particular experience, or they only rated the experiences that they had had exposure to. Because of the missing data for such questions, I was not able to conduct bivariate analysis on differences between the pediatric population and the reproductive/pregnant populations; therefore the data will be presented as descriptive statistics.

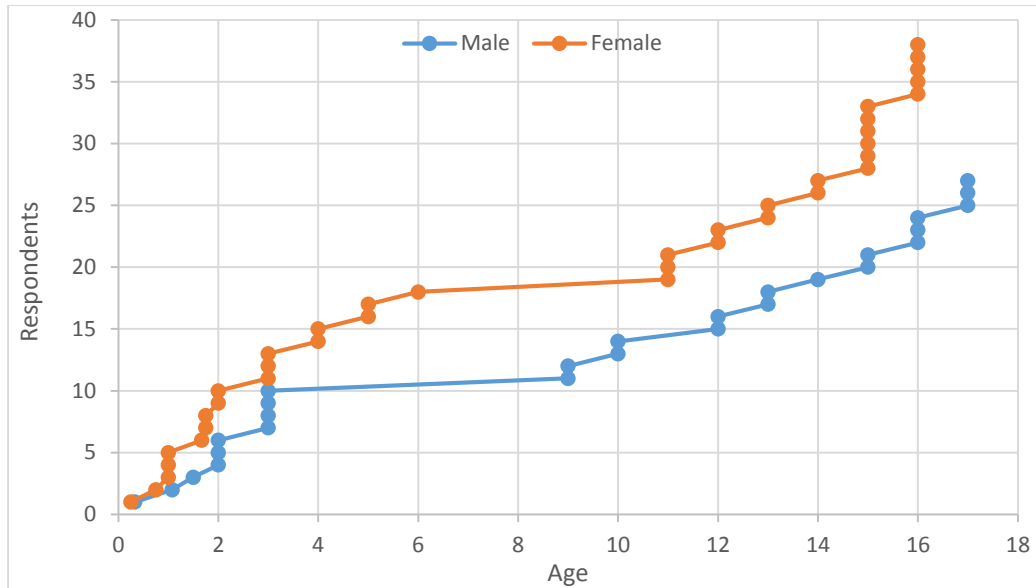
**Table 1: Age and Race Distribution**

	<b>Adult Patients (N=73)</b>	<b>Pediatric Patients (N=65)</b>	<b>Total Sample (N=138)</b>
<b>Age; mean (SD)</b>	32.5 (5.3)	8.9 (6.0)	
<b>Female; % Female</b>	100%	37; 56.9%	79.7%
<b>Race; %</b>			
Caucasian/White	58 (79.5%)	53 (81.5)	111 (80.4%)
Asian	4 (5.5%)	1 (1.5%)	5 (3.6%)
Black/African American	8 (40.9%)	8 (12.3%)	16 (11.6%)
Hispanic	1 (1.4%)	1 (1.5%)	2 (1.4%)
Multiracial	1 (1.4%)	1(1.5%)	2 (1.4%)
No Response	1 (1.4%)	1 (1.5%)	2 (1.4%)

When looking at the gender breakdown in the pediatric population, of the 65 children whose parents responded, 37 (57.8%) of the children were girls and 27 (42.2%) were boys. In terms of racial breakdown, our sample was predominantly Caucasian (n=111, 80.4%), with African American (n=16, 11.6%) being the next largest group. However, it should be noted that some of the respondents indicated more than one race, and some of the parents who responded to the pediatric survey responded for more than one child. For the question where we asked respondents to self-identify their race, some respondents identifying as “multiracial”, and other respondents (n=3) listing multiple races rather than identifying as multiracial. Due to this discrepancy in self-identification of race, it is unclear to what extent the various racial categories are over or under represented. This is another limitation of the study- since the author did not

list the various racial categories, with a description for each one, there is bound to be some misclassification of race.

The average age for the reproductive/pregnant sample is 32.5 years, and among the reproductive age group, even though we aimed to look at those between the ages of 18-40, the youngest patient was 20. Within the pediatric sample, the average age of all the children is 8.9 years, with the average age of boys being 9.0 years, and average age of girls being 8.6. Figure 2 below charts the age distribution of the pediatric sample, and as the graph demonstrates there are two distinct age groups among both genders. In the male sample, the two distinct populations are the 0-3 population and 9-17 population, and among the female sample, there is a steady increase between the ages of 0-6, with a sudden spike in age to a second age group to 11-16. My hypothesis for this is that in the 0-3 population, it is common to go to the doctor for immunization and well child check-up; and among the 9-17 population, is when you start to see the effects of sports and other childhood trauma. The surge in older girls could possibly be contributed to events such as needing sports physicals, puberty, menstruation/birth control, it is not clear why for the younger age group, why the age range is larger for girls than boys.



**Figure 1:** Age distribution of pediatric population

Among those of reproductive age, the patients were asked if they had children and if they were aware that UK DFCM treats children and adolescents. Of the 66 responses, 37 women did not have children and 29 women did have children. The following table shows the breakdown of reproductive aged women who have and do not have children, and are aware that the department treats children and adolescents. With a Chi-Square of 0.122, and a two sided significance of 0.775, there is no statistical difference between the two populations. However, it is important to determine why 23 (79.3%) of the women who have children were not aware that the DFCM treats children and adolescents.

**Table 2:** Comparison of Reproductive Aged Women with and without kids who are aware that UK FCM treats Children and Adolescents

		FCM Treats		Total
		Yes	No	
<i>Don't Have Children</i>	<i>Count</i>	9 (24.3%)	28 (75.7%)	37
<i>Have Children</i>	<i>Count</i>	6 (20.7%)	23 (79.3%)	29
<i>Total</i>	<i>Count</i>	15 (22.7%)	51 (77.3%)	66

**Table 3: How did you hear about our Clinic?**

	Adult Patients (N=73)	Pediatric Patients (N=57)	Total (N=130)	Chi-square (p-value)
<b>Advertisement</b>	3 (4.1%)	1 (1.8%)	4 (3.1%)	*
<b>Family Referral</b>	10 (13.7%)	11 (19.3%)	21 (16.2%)	0.741 (0.473)
<b>Friend Referral</b>	9 (12.3%)	9 (15.8%)	18 (13.8%)	0.321 (0.615)
<b>Brochure</b>	0 (0%)	0 (0%)	0 (0%)	*
<b>School Employee</b>	4 (5.5%)	3 (5.3%)	7 (5.3%)	*
<b>Daycare Center</b>	0 (0%)	0 (0%)	0 (0%)	*
<b>Other</b>	49 (67.1%)	33 (57.9%)	82 (63.1%)	1.17 (0.36)

*\*Cell sizes for these options were too small to conduct a chi-square test on*

With regards to how the respondents heard about the clinic, chi-square tests were not conducted on four of the options, there were not enough responses to those questions. It should also be noted that there is the possibility that some patient's marked more than one option for how they heard about our clinic, so the totals may not sum up to 100%. Among the pediatric and adult patient samples, no one heard about the clinic via brochure or daycare center, and "other" received

the most responses. The researcher wanted to see if one sample was more likely to have heard about UK DFCM through one method than the other population, so chi-square analyses were conducted on methods that elicited more than 5 “yes” responses. However, none of the methods were more significantly different between the two samples.

In addition to asking the patients *how* the patients heard about our clinic, we also asked them *why* they came to our clinic, with Table 4 below showing the results to this question. The only response to this question that garnered a statistically significant response was the ability to make an appointment for the whole family in one place. 18 pediatric (31.6%) patients responded positively to this question, whereas only seven (9.6%) patients from the reproductive/pregnant population responded positively; this resulted in a chi-square of 9.96 and a significance of 0.003. Roughly equal numbers of the pediatric population and reproductive population, 24 (4.2%) and 26 (3.5%) respondents respectively, said that they came to our practice because their insurance was accepted here. Similarly, we asked the patients if they came to our practice because their insurance required them to seek care at UK; 32 (43.84%) adult patients responded in the affirmative, while only 18 (31.57%) in the pediatric population did so. However, this difference between the two populations was not significant. Surprisingly, very few patients indicated they came to the practice because of name familiarity, with only 9 (6.9%) respondents between the two groups selecting this.

**Table 4: Why did you originally come to our clinic?**

	<b>Adult Patients</b> (N=73)	<b>Pediatric Patients</b> (N=57)	<b>Total</b> (N=130)	<b>Chi-square</b> <b>(p-value)</b>
<b>Proximity to home</b>	11 (15.1%)	9 (15.8%)	20 (15.3%)	0.13 (1.0)
<b>Proximity to school/place of work/etc.</b>	10 (13.7%)	9 (15.8%)	19 (14.6%)	0.112 (0.805)
<b>Name Familiarity</b>	4 (5.5%)	5 (8.8%)	9 (6.9%)	N/A
<b>Ability to make appointments for the whole family in one place</b>	7 (9.6%)	18 (31.6%)	25 (19.2%)	9.96 (0.003)
<b>Your insurance is accepted at our practice</b>	26 (35.6%)	24 (42.1%)	50 (38.5%)	0.569 (0.47)
<b>Your insurance requires you to seek care at UK Healthcare</b>	32 (43.8%)	18 (31.6%)	50 (38.5%)	2.032 (0.204)
<b>Other</b>	11 (15.1%)	20 (35.1%)	31 (23.8%)	7.064 (0.012)

When we asked the patient population how they heard of UK FCMC, and why they chose to come to our clinic, we provided them with a range of options to choose from, as well as an “other” option. For those who marked “other”, we asked them to provide an answer. The most common answer given to how they heard about our clinic was that the respondent was a current (or former) UK employee (n=24, 18.5%), with the next two common answers being due to

insurance/HMO (n=14, 10.8%), and the doctor moving to the UK FCMC. Among the reproductive age population, for those who said that they heard about our clinic through an advertisement, one patient indicated it was through insurance, while another patient said that she had called herself and referred. However this patient was also was a patient with UK when she was a minor. Among the pregnant women sample, one came to UK FCMC due to natural birth friendly practices, while another came due to the clinic providing OB/GYN care in addition to general medicine. For the question regarding why parents chose to come to UK FCM, three of the answers had the overarching theme of being recommended to Dr. A, and/or wanting an unmedicated birth. This theme was also seen among the pregnant woman population, where one of the respondents mentioned that she would recommend our practice to others, as long as they get to see Dr. A. It is interesting to note that two of the respondents heard about or practice through a specific yoga practice called BabyMoon, while another two patients heard about our practice through an OB/GYN referral. There were also two respondents who indicated that they were patients as a child, and simply continued on with their care.

Since the reproductive population are in their childbearing years, we understood that there would be a mix of respondents' having children, and those who did not have children. So for those who did have children, we asked them where their children received care if their child(ren) did not receive care with UK FCM. Of the parents that took their child elsewhere for care, the most common place was the UK Pediatric practice on Maxwell Street (n=8, 6.4%). There were four other parents who also indicated taking their children to a pediatric clinic, other than the one on Maxwell, with two of the four parents taking their child to an internal medicine/pediatrician. In addition, there were two (1.6%) parents who indicated taking their child to a private practice doctor. The most common reason why parents were taking their child elsewhere for care is because



they wanted their child to see a pediatrician (n=5, 4%). Among the pregnant woman population, one of the respondents stated that she planned to take her child to a UK pediatrician where the elder child of the respondent also goes to for care. Otherwise, we again saw a variety in the reasons as to why parents chose to take their children elsewhere for care; the reasons ranged from not knowing FCM treated children, more consistency with providers, being closer to home, and the provider being the physician for the parent when she was younger.

We also asked patients what factors were important in coming to the clinic for care, with the options being: their insurance was accepted at our clinic, relationship with provider, they like their provider, and/or proximity to school/place of work, etc, and any other important factors. For this question, patients were asked to rate each of the options on a scale of 1 to 5, with 1 being the least important and 5 being the most important. Table 5 below lists the means and standard deviations for both populations, for each of these items. The author ran a two sided independent sample t-test to determine whether the means were significant. As the table indicates, the t-tests for all of the factors yielded a significance greater than 0.05.

**Table 5: What are some of the important factors in deciding where to take your child for care?**

	<b>Adult Patients (N=73)</b>	<b>Pediatric Patients (N=57)</b>	<b>P-value</b>
<b>The practice accepts your insurance</b>	4.49 (1.12)	4.64 (0.862)	0.45
<b>You already have a relationship with the provider</b>	3.62 (1.35)	3.79 (1.3)	0.54
<b>You were able to find a provider you liked</b>	4.45 (0.89)	4.56 (0.84)	0.55
<b>Proximity to home/school/place of work/etc.</b>	3.62 (1.39)	3.58 (1.08)	0.91

The last Likert scaled question that we asked patients, was what some of their positive experiences were at our clinic. In the table below (Table 6), we list the means and standard deviations for both the pediatric and the adult population for each of the experiences. Again for this question, the author conducted a two sided independent samples t-test, to see whether or not there were any differences between the two populations. The only experience that resulted in a statistically significant difference was the ability to contact providers after hours with questions and comments, with the pediatric patients rating this experience higher. This could potentially be due to parents needing to contact their provider in event that their child fell ill outside of normal business hours.

**Table 6: What are some of your positive experiences at this clinic?**

	<b>Adults</b> (N=73) Mean (SD)	<b>Pediatric</b> (N=57) Mean (SD)	<b>P-Value</b>
<b>Ease of making an appointment</b>	3.72 (1.25)	4.00 (1.06)	0.19
<b>Ease of making a same day appointment</b>	2.87 (1.37)	3.18 (1.35)	0.23
<b>Length of wait times</b>	3.61 (1.23)	3.78 (1.21)	0.44
<b>Ability to see the provider that you wish</b>	3.17 (1.36)	3.60 (1.39)	0.09
<b>Can contact provider after hours with questions/concerns</b>	2.74 (1.39)	3.43 (1.47)	0.02

In Appendix B, Figures 3 to 11 show the distribution of responses for the items described in Table 5 and Table 6. Figure 12 in Appendix B shows the distribution of the responses to the question “How would you rate your overall care at our clinic?” The mean rating was a 3.91, with a standard deviation of 1.05.

### Strengths and Care Qualities

In this section, I will be discussing some of the major themes from the open ended questions relating to what some of the strengths of the DFCM are, and what qualities patients look for in their care. Table 7 below describes the bullet points describing the main themes found in this section.

**Table 7: Strengths and Care Qualities**

- Knowledgeable, and being up to date on the latest research
- Being friendly and personable
- Taking a genuine interest in the growth and development of the child
- Communicating (listening to/acknowledging concerns, the way explanations and answers are given, offering suggestion)
- Being close to home
- Availability
- Consistency in seeing the same provider
- Having the provider respect the parent as also important

The UK DFCM moved from an on campus location to an off campus location in the summer of 2015, where patients no longer have to pay for parking. One of the strengths that was brought up, was the new location, with two patients in the pediatric population also commented on how they liked the new location, with one saying it was due to the fact that patients no longer have to pay for parking. In addition, the parking lot is located directly in front of the FCM building, meaning that patients do not have to walk from a parking garage to a location within the university hospital.

When asked about the qualities that they look for in their child's provider, there was a range in the characteristics. One of the responses that was given, was that the provider should be knowledgeable, with one patient specifying knowledge about home remedies and homeopathy.

Being friendly, taking a genuine interest in the growth and development of the child, being “well-informed on latest research”, communicating and being close to home were other factors that the patients listed as important for their child’s provider to possess. However, some qualities that this group looked for in a provider included availability, and that too, on short notice; being personable; listening to and acknowledging concerns; and the way the doctor explains things and answers questions/offering suggestions. The need for providers to be available on short notice may be due to parents needing to make last minute appointments for children who suddenly get ill.

Parents cited having consistency in seeing the same provider, and having the provider respect the parent as also important. One parent stated that the reason that she had stayed with Family Medicine rather than switching to pediatrics was the continuity of care that her daughter is receiving, as she is still being treated by the doctor who delivered her. This patient felt that continuity encourages a relationship between doctors and patients, and “helps children feel more comfortable with doctors.” This same patient went on to say that the doctors beyond the two doctors who deliver, do not seem very interested in pediatric care, and that if Dr. A (pseudonym used) had not returned, they would have switched to pediatric care. This is backed by another patient who stated that “...Dr. A is the main reason I go to this practice...”

In the question “What factors are important in deciding where to take your child for care?”, patients had a list of options that asked them to rank items on a scale of 1 to 5, with 1 being the least important, and 5 being the most important. Of those who did leave comments, one parent discussed the possibility of choosing your own tech, as they were good and had the most interaction with the kids. However, two parents (3.5%) commented being seen in a timely manner was an important factor. The most important quality in a child’s medical clinic that this population felt was crucial, was for the provider to be child friendly and for the child to like the doctor. Other

important factors that were brought up were having enough time to talk with the physician or PA, having questions answered, and the doctor being willing to help. When it comes to qualities in a medical *practitioner*, the most important quality according to the parent was easy for the children to talk to/creating a bond with the child/knowing the child (n=14, 10.7%). Other qualities that parents deemed important was the practitioner being friendly, patient, caring, kind, considerate and understanding (n=10, 7.7%).

### Weakness

One of the open ended questions asked the respondents what they thought some of the weaknesses were in the practice, and in this section, I will be discussing some of the overarching themes. The table below highlights the themes of some of the weaknesses found in my qualitative analysis of this question.

**Table 8: Weaknesses**

<input type="checkbox"/> Not being able to anticipate the needs of the patients <ul style="list-style-type: none"> <li><input type="checkbox"/> One instance where it took a long time to get shots</li> <li><input type="checkbox"/> Patient given the wrong paperwork, and another requesting some sort of new-patient packet</li> </ul>
<input type="checkbox"/> Not being able to see the provider of choice
<input type="checkbox"/> Lack of continuity in care
<input type="checkbox"/> Waiting times need to be shortened
<input type="checkbox"/> The ability to make an appointment, including same day appointments, needs to be improved
<input type="checkbox"/> Need to improve communication between providers and patients, as 6 patients stated they had not tried/having trouble/did not know they could do this

Similar to the pregnant women sample, the parents of our pediatric population were also asked where their children received care if they were no longer a patient with us, and if the child was no longer a patient with us, why. Out of the 57 responses in this category, six patients (10.5%) no longer receive their care with the UK Family and Community Medicine Clinic. Of these six patients, two moved to the UK Pediatrics practice, one moved out of state, another moved to Growing Health Families in Louisville, Kentucky, another patient moved to Shriner's, and lastly, a patient said that the child had gotten a doctor, without specifying where this doctor was. The reason for leaving the practice also varied from patient to patient. The reasons ranged from moving, slow service, misdiagnosis, preferring a pediatrician, and no longer being a UK patient. However, one of the respondents who is still a patient with us told us that "We would no longer be a patient here if I could find another doctor office that accepts our insurance and is taking new patients."

We also asked of this patient sample to rate their experience with regards to a few different issues on a scale of 1-5. Like the question before it, 5 would be the highest rating, while 1 would be the lowest rating. Again similar to the previous question, patients were asked to describe their positive or negative experiences, with many patients leaving a numerical rating rather than a comment. However, one parent did mention a negative experience where it took a while to get shots, with this parent commenting "Can't they anticipate better?" Another parent wrote about a situation where no one called to schedule an ultrasound and the parent schedule it when he or she went into the clinic for something else. Even though this question also elicited a variety of different experiences, both positive and negative, it is worth noting that there were three responses regarding not being able to see the provider that the patient preferred. This experience falls in line with the other patient populations commenting on the importance of continuity with providers. When asked

what they thought were some areas the clinic could improve in, four respondents stated that continuity of care was such an area, with an additional three patients stating that getting in to see a particular doctor was an area for improvement. Another negative experience that was brought up was not being able to get an appointment in a timely manner. A respondent described a situation where she was told that she would have to wait six weeks to be seen for an UTI, and ended up having to go to urgent care for treatment.

In the section where we asked patients about what qualities they look for in their children's provider, four patients (5.8%) in the reproductive aged group commented along the lines being able to be seen on short notice and the availability to visit on any day of the week.

#### Opportunity for Improvement

Patients varied in their answers to how the practice could improve. Scheduling was also brought up as an area where the clinic could improve, with eight patients (6.1%) in the reproductive stating the need for improved appointment scheduling, same day appointments. One of the patients who commented on this aspect of improvement wrote, "I understand that it is nearly impossible to improve this but as a person with extremely limited # of days off it was really hard to get an appointment. Maybe Saturday hour's 1-2x/month?" The second comment that parents tended to make was related to getting in when needed/ease of making same day appointments for emergencies, with 11 patients (8.5%) raising this issue. Related to this issue were two parents asking that the phone lines be open at 7:30 am rather than at 8 am. As stated previously, the ability to get in on short notice is something that patients looked for in their provider.

Another issue that was brought up, was the wait times could be shortened, with 15 patients (11.5%) mentioning this. One of the patients commented that "...not all nurses are practiced in



dealing with well child visits, including growth measurements.” Another patient commented on the accuracy of her blood pressure, since the cuff seemed “old and outdated.”

Also, the issue of improving the check-in process was brought up, with one patient stating that they were given the wrong paperwork during their first appointment, and another patient commenting that the clinic “should provide some sort of new patient packet. We didn’t get any information on the nurse on-call service or other aspects of baby care.” There were also two comments regarding appointment scheduling, with one patient commenting on the difficulty of getting same day appointments, and another patient commenting that it is frustrating not being able to get all the family members to see the same doctor very easily, and that “the whole team ‘color’ thing is frustrating.” At the UK DFCM, each team is assigned a color, and consists of residents and attendings.

It is also interesting to note that one of the questions asked the respondents to rate their ease in contacting their provider after hours with questions and comments. In response, four respondents stated that they never tried, another stating that they had trouble setting up the portal and another stating that they did not know. A patient commented on the portal system, stating “Have tried to use portal to schedule and it is just sent a personal message to my provider-not helpful. Love my provider but do not trust that she will return calls/portal messages. Have never received lab results. (She probably thinks I get it another way).” Lastly, the third common remark that patients made was respect for patients by providers needing improvement, with four patients making this comment.

#### Additional Feedback

At the end of the survey, patients were asked if they had any additional comments. For the most part, patients were very positive in their comments, with several patients mentioning certain

providers by name stating how much they liked their care. In fact, Dr. A was mentioned on two different occasions, with both patients stating how much they like her care. One of the participants also described how “In her absence, we saw other attending, but none were as patient and caring with my girls.”

### **Limitations**

One of the limitations of this study was that we were unable to send postcard reminders to the patients to fill out the survey. One reason that this was a limitation is that since the surveys were sent starting in October of 2015, it is possible that for the surveys sent closer to the holiday season were not returned due to the busyness of this period. And with patients potentially travelling, they may not have seen the survey until after the deadline had already passed. In an article by Fox et al., the researchers cited an article by Dillman where it was stated that sending a follow-up “serves to remind non-respondents that they have forgotten to complete the survey, a common reason for non-response (474-475).” However, the merit in sending a follow up post card varied in the articles that Fox et al. (1988) reviewed. They reviewed six articles, and in 33 of the 36 comparisons, when a follow up post card was used, the effect of the post card ranged from an 11% decrease to a 35% increase in responses.

Another limitation is that the patients who were either really dissatisfied with their care, or were really happy with their care tended to be the ones to fill out the qualitative portion of the survey, while those who seemed to perceive their care as average were less likely to fill out that portion of the survey. In Picaver’s (2001) article, the author describes how it is important “to identify response bias attributable to health...In general, it is suggested that respondents to health surveys are the “worried well”: healthy people who see their doctor regularly and follow healthy lifestyle practices (411).”

Another limitation of this study is that a follow up survey could not be sent out to determine the success of the changes made to the department, once any changes are actually implemented. This limitation itself poses some challenges as the original surveys were sent out with the intent that the responses would be anonymous, so it would be difficult to ascertain whether the respondents to the follow up surveys are the same people who responded to the original survey.

In the open response section of the survey, one of the respondents who indicated these qualities as important, also indicated that she was not yet a parent. This was an issue that we came across in surveying this particular population- we had indicated that if the respondent does not have children or does not plan to have children, to skip certain parts of the survey; however, we still had some women who did not have children filling out parts of the survey indicated for women with children. However, we decided to include their comments, since if they choose to have children, it is important to take their viewpoints into consideration.

Our reasoning for choosing to mail the survey versus having the patient fill out the survey at the clinic is that we felt the patients may feel pressured into giving the responses that they thought we want to hear. By being able to fill out the survey in the privacy of their own home, we felt we would receive more reliable data on the comments and concerns of the patients. However, this led to a few other limitations. One such limitation was that previously discussed was the use of deadline for returning the survey. While there has not been much research done on the effect of using a deadline with regards to a mailed survey, in a study by Nevin and Ford (1976) the authors looked at the effect of specifying 5 day, 7 day and 9 day deadlines in their cover letters. It was found that using no deadline had similar results to the 7 day deadline response rate (49.8% vs. 48.5% respectively). The authors hypothesized that those who did not have a deadline “might be implicitly assuming a 7-day deadline as an acceptable response period (117).” However, it was

noted that while the use of a deadline did not automatically generate a swifter and higher, it did “seem to decrease the rate of returns following the deadline date (117).” Similar results were found by Roberts et al. (1978) who stated in their article that after the deadline, “there is a tendency toward convergence in response rates as the experimental group response rates decline and control group returns continue (489).” Even though we used a deadline in hopes of forcing more responses, this thinking may have actually been a detriment to the number of responses we could have potentially gotten. Though these studies are nearly 40 years old, these are the most recent studies that have been published that look at the effects using a survey deadline

Another limitation with the survey was the wording of some of the questions. As mentioned earlier, we asked patients to rate some of their positive experiences in the clinic. This resulted in some of the respondents not rating all of the experiences, and there are different reasons for this such as the patient having had a negative experience with the option listed or actually not having had any experience with said option. For example, when we asked the patients to rate their ability to contact their provider after hours with questions and comments, there were some patients who did not give a rating for this because they were unaware they could do this, or had not tried to do so.

An article by Edwards et al. (2002) strived to find practices that might increase the number of responses to mailed questionnaires. The authors conducted a systematic review of “randomized controlled trials of any method to influence response to postal questionnaires (1).” It was found that when incentives of cash were offered, the response rates often doubled (OR=2.02); this was also found to be true when incentives were not dependent on responding to the survey (OR=1.71). Other factors that were found to increase response rates included having short questionnaires (OR=1.86), using colored ink versus blue or black ink (OR=1.39), using stamped return envelopes

OR=1.26), contacting participants before sending questionnaires (OR=1.54), and doing follow up contact (OR=1.44). For this particular capstone project, the author was unable to contact respondents beforehand as well as send out follow up notices due to time and monetary constraints. Due to similar financial constraints, we were unable to offer respondents a monetary incentive for having filled out the survey. However to increase response rate, the questionnaire was limited to two pages single sided. With the questionnaire, a cover letter, which was printed on UK Family and Community Medicine letterhead, was included describing what the survey was about and had a deadline by which the survey had to be postmarked by. Our use of a letterhead in the cover letter is backed up by the researchers of this article who found that “questionnaires originating from universities were more likely to be returned than questionnaires from other sources, such as commercial organizations (OR=1.31) (4)”. There was a pre-paid and self-addressed business reply envelope that was included, so that the respondents could mail their questionnaire’s in anonymously and did not have to pay for mailing. Even though it was found that colored ink elicited more responses, in this project, only the cover letters were sent out in colored ink while the surveys were sent out in black and white.

It was previously stated that we included business reply envelopes so that respondents could mail the surveys anonymously. However, it was stated otherwise in the article by Fox et al. (1988), where the authors cited an article which stated that “they may be seen as less personal and thus reduce the return rate (476).” In their study, the authors looked at nine studies that compared stamped versus business reply return postage. It was found that in 42 of the 50 comparisons in the nine studies, business reply had a lower response rate than stamps. However, it should be noted that it was stated that “The effect of stamps ranged from a decrease in the response rate of 4.5% to an increase of 32% versus business reply (476)”. Due to the wide variation in the response rate

between stamps and business reply envelopes, it is not clear what impact this had on this particular project.

However, there are other issues that need to be taken into account when looking at response rates for the different methods of data collection. In the article “National Health Surveys by mail or home interview: effects on response” (2001) by HSJ Picaver, it was noted in the article that “there is some evidence that lower socioeconomic classes are under-represented in mail surveys compared with interview surveys. Thirdly, people can respond differently to questions on paper than to questions asked by an interviewer (408).” This study was carried out in the Netherlands, carried out two types of health surveys: one was the Netherlands Health Interview Survey (NetHIS), which used a combination of a paper survey and an at home face to face interview conducted by a trained interviewer, with the other being the Dutch Musculoskeletal Complaints and Consequences Cohort study (DMC-study), which just used mailed questionnaires. It was found that the interview portion of the NetHIS group yielded a response rate of 58.4%, while the DMC-study yielded a response of 46.9%. However, it should be noted that in the NetHIS group, the mailed survey was second step, and non-response brought their response rate down to 47.9%. As the researcher noted, mailed survey that was mailed yielded a lower response rate than an interview survey.

With technology becoming a larger part of day to day life, researchers have also looked at how electronic surveys compared to mail surveys (Shih & Fan, 2008). Part of the issue with web surveys that the authors brought up is the “uneven access to Web technology of different populations from different social strata. Because of this concern, Web survey research, unlike mail survey research, often targets specific populations who have internet access, such as staffs, or students at a university (230).” Shih and Fan found that in the 39 results that they compared, mail

surveys had an unweighted response rate of 45%, and web surveys had an unweighted response rate of 34%. The authors also noted that other studies which did not use follow up reminders had a 4% higher response rate in mail surveys than in web surveys, and it was noted that even though there was the possibility that follow up reminders increased response rates for both forms of questionnaires, but it being more effective for mailed questionnaires.

### **Discussion and Conclusion**

The aim of this capstone project was to determine areas where the University of Kentucky Family and Community Medicine Clinic could improve in an effort to increase the number of pediatric patients. Quality improvement (QI) is a topic that has been written on extensively, most notably with Avedis Donabedian's articles in 1966 and 1988. QI is based upon structure, processes and outcomes according to a presentation by Katz et al. titled "How to measure quality of care in Family Practice using Administrative Data", is reiterated by Donabedian in his articles. *Structure* is referred to as "measuring characteristics that may include personnel, equipment or finances." On the other hand, *processes* involves "at the actual care given by physicians which encompasses clinical and interpersonal effectiveness", and *outcomes* refers to the "consequences of the care which may include health status or user satisfaction." The survey that was administered as a part of this capstone touched on all three aspects of this. Of the patient populations that we surveyed, we asked patients about their experiences regarding being able to make an appointment, and too with the provider that they wished to see (structure), what some of the characteristics they looked for in a provider either for themselves or for their child (interpersonal effectiveness), and finally what their overall satisfaction was with they care that they received at our clinic (outcomes). As Donabedian (1988) describes in his article, when it comes to the performance of practitioners, there are two elements that make up performance: technical performance and interpersonal

performance. Part of having an interprofessional relationship means that there must be privacy, confidentiality, informed choice, concern, empathy, honesty, tact and sensitivity. Many of qualities that define an interprofessional relationship are what patients described as important to them in a relationship with their provider.

In the quantitative section, there were three questions that elicited a statistically significant response. When asked why they came to our clinic, patients said the ability to make appointments for the whole family in one place was more common ( $p= 0.003$ ) for parents of the pediatric population choosing this option more than the adult population. This potentially may be due to children getting ill after hours, and parents needing to contact the provider. The other response that garnered a statistically significant response was being able to make appointments for the whole family in one place, with the pediatric population also responding higher on this question than the adult population. When asked why they originally chose to come to our clinic, the ability to make appointments in one place and “other” were significant, with the pediatric population positively responding to both options at higher numbers than the adult population. The author hypothesizes that the reason the parents of the pediatric population likes the ability to bring the whole family to one place is for convenience, and having a central location for care. Lastly, a number of patients talked about how it was important for the provider to have a relationship with their child. This is an area that residents and providers at the UK DFCM could work on, if they have not already been doing so, because it is important to keep in mind that for pediatric patients, the child and the parent are the patients; this means it is important for the provider to have a rapport with the child, and not just the parent.

After doing a frequency analysis on the overall satisfaction of care between the two groups, it was found that most patients ( $n=49$ ) rated their overall care as a four, on a scale of one to five,



with five being the best and one being the worst. Among the qualitative section, we got a variety of answers on what the UK DFCM is doing well, and what we could improve upon. When asked about the qualities they look for in a provider, responses ranged from the provider being knowledgeable, to being friendly, taking a genuine interest in the growth and development of the child, being “well-informed on latest research.” However, some qualities that this group looked for in a provider included availability, being personable, listening to and acknowledging concerns, and the way the doctor explains things and answers questions/offering suggestions. The parents cited having consistency in seeing the same provider, and having the provider respect the parent as also important. Lastly, the patients discussed how they liked the new location because they did not have to pay for parking. This aspect of not having to walk long distances from the parking garage to the clinic might be beneficial to parents with young children.

There were also some areas mentioned that UK FCM could improve upon. One issue was that the wait times could be shortened, with 15 parents bringing this up as an issue. The second comment that parents tended to make was related to getting in when needed/ease of making same day appointments for emergencies or urgent (n=8). Related to this issue were 2 parents asking that the phone lines be open at 7:30 am, rather than at 8 am. As stated previously, the ability to get in on short notice is something that patients looked for in their provider. However the issue of improving the check in process and receiving the proper paperwork was brought up. There were also two comments regarding appointment scheduling, with one patient commenting on the difficulty of getting same day appointments, with another patient commenting that it is frustrating not being able to get all the family members to see the same doctor very easily, and that “the whole team ‘color’ thing is frustrating.”

In the article by Belardi and colleagues (2004), the authors did a study where they compared a type of scheduling known as Advanced Access to the traditional method of appointment booking. In the Advanced Access model, 25% of a physician's daily schedule was prebooked and the rest was open for same-day access, whereas in the traditional method of appointments where only 40-50% of appointments are reserved for same day or urgent visits. Even though the authors did not find any differences in patient satisfaction after implementing the, the authors found that there was a significant ( $p < 0.001$ ) in the wait times for 15 minute and 30 minute appointments. There was also a "significant improvement in primary care physician-patient match percentage for the advanced access team... ( $P < .015$ ) (343)." While having same day appointments may not increase the patient's satisfaction with their care at UK DFCM, it would result in improvements in some of the other areas that were brought up as needing improvement, such as being able to be seen in a timely manner and being able to see the provider of choice.

Murray and Berwick (2003) cited a 1999 Kaiser Family Foundation survey in their article, which discussed the issues of access and wait time. In the Kaiser Foundation survey, 27% of young adults under the age of 65 who were insured and health problems, "had difficulty gaining timely access to a clinician (1035)." It was found that between 1997 and 2001, the issue of getting a timely appointment got worse with a 10% increase in those reporting this to be an issue. The authors also cited a 2001 women's health survey which found that of the women who were in fair or poor health, 28% of them reported that they had to delay care due to an inability to get a doctor's appointment in an appropriate amount of time (*Women's Health in the United States: Health Coverage and Access to Care*, 2002). These findings relate to the results of this capstone project because while this capstone did not inquire about the overall health of the respondents, our respondents do fall under the age of 65, and many with health insurance, with many of our

respondents also being female. The issue of continuity and scheduling was the focus of the article by Weir et al. "Continuity and Access in an Academic Family Medicine Center" (2016). The authors in this study joined with other primary care practices to see how they could improve appointment access and the continuity of care. According to the article,

"Understanding demand for appointments and balancing supply to meet appointment demand is the single most important lever to improve access and continuity and is particularly important at multiple different levels in practices with part-time PCPs...A special challenge in residency programs relates to variate in appointment supply from week to week due to resident rotations. Weekly demand from a PCP's panel is relatively constant and predictable. (102)"

When it comes to scheduling an appointment, Weir et al. found that patients were most satisfied with a return appointment with a PCP, when the internal appointment requests was less than three months into the future. To minimize delay, it was recommended that templates were built "so that each appointment slot is bookable with any of several different appointment types (103)." The authors also recommended that simplifying "appointment types by matching appointment types to specific demand streams (eg. New, return to PCP, return to member of PCP's team) rather than the agenda of the visit (eg, well baby, acute, physical exam, follow-up diabetes). (103)" Based on the literature and the results from the survey, it would be beneficial to the FCM department to reorganize the way that patient appointments are made so that patients are able to be seen in a timely manner. This might also include opening the phone lines a half-hour earlier, and having the clinic open on a Saturday once a month to accommodate different schedules, as it was suggested in the qualitative section of the survey.

As described in the literature review, the article by Sutter et al. found that family medicine residents were 2.5 times more likely to continue practicing OB if there was an OB or Maternal and Child Health Fellowship on site. To address this issue of lack of providers delivering or interested

in pediatrics, the Family and Community Medicine should consider implementing such a fellowship as a part of their residency program, or perhaps give preference to residents who have completed such a fellowship. While doing such a fellowship does not automatically mean that the residents will continue to practice at FCM post residency, as it is a separate issue, it will hopefully help to reverse the declining trend of FCM residents providing prenatal and children's care. However, being able to see the provider that one wishes to was also brought up in the qualitative portion.

This issue is two pronged, with (1) scheduling and (2) residents leaving after finishing their residencies contributing to this problem. The recommendations presented in this capstone project by the author are a combination of both big QI and small QI. This gives the DFCM a variety of recommendations to choose from, when they choose to improve the clinic. To tackle this issue of residents leaving, and disrupting the rapport that patients have built with them, perhaps FCM could work with residents to come up with an incentive, particularly for those who have completed an OB or MCH Fellowship that would incentivize them to remain at UK FCM upon completing their residencies. One such incentive for residents to stay after completing their residencies, could be receiving protected time to do quality improvement work. As the article by Patow et al. discussed how residents are not trained in quality improvement due to a variety of constraints, residents who stay on with UK FCM could not only receive training in quality improvement, but protected time to work on their own quality improvement projects. The researchers found that there are three values that are found that undermine QI engagement, and they are: "placement of a higher value on individual autonomy than on commitment to the well-being and goals of the enterprise, resistance to process standardization, and low regard for systems thinking (1762)." Patow and colleagues also noted that laboratory and clinical research are given a different emphasis compared

to QI, in terms of an academic discipline. However, residents also face other barriers for participating in QI initiatives, include lack of time, inability to include QI into an otherwise crowded curriculum, interruption of QI initiatives due to away rotations, etc. While the authors stated that more research needs to be done on this topic, I believe that it is important to include residents in quality improvement projects, especially in light of the declines in pregnancy care by family medicine physicians. The idea of being able to assist in the improvement of the organization through doing quality improvement work may serve as an incentive for some residents to stay.

As for the scheduling, this is an issue discussed by Murray and Berwick (2003). In this articles, the authors discuss the traditional model, the carve-out model and the Advanced Access Model. In the article, the authors stated that “The advanced access models sorts appointment demand by clinician, not by clinical urgency (1037).” Doing this would however, have to be balanced with patients who did comment on being able to make same day appointments for clinical urgencies. However, this could be addressed by having the clinic open on the weekend once or twice a month, as one of the patients suggested.

One of the strategies that the UK DFCM could implement to increase the pediatric population is through better advertisement. It was found that none of the patients who responded to our survey heard about our clinic through brochures or daycare centers. While there are patients who come to the clinic because their insurance requires that they seek care at UK, there are patients who are not under this obligation. By advertising through brochures at daycare centers, not only would the department be targeting the intended population, we would be able to reach out to those who are not required to seek care at UK, and may not be familiar with the services that UK offers. And even for those who are required to seek care at UK, there were those who responded that even

though they had children, they were not aware that Family Medicine treats children and adolescents.

Communication is another area that could be improved upon. In the qualitative section among parents, eight parents stated that communication was important. On this end, when asked if they were able to contact their provider after hours with comments and questions, there were some patients who stated that they were unaware that they could do this, or had never tried. Seeing this gap in placing importance on communication, and being unaware that they can contact their doctors outside of normal business hours, it would be wise for the department to advertise the fact that patients can not only do this, but provide instructions in a readily accessible place (i.e. waiting room) on to set up/use their patient portals to communicate with their providers. Another way this communication issue can be addressed is to lengthen appointments. Not only would this address the issue that was raised about appointments being rushed, it would give more time for the patients and providers to communicate. There are of course economical considerations to be taken into account, since lengthening appointment times would mean that providers would see fewer patients over the course of the day. Through my qualitative analysis, it seemed as if there is currently only one doctor doing deliveries in the department (Dr. A), and at least one parent made the comment that it was difficult to find another family medicine provider who was as interested in pediatrics as Dr. A in the event that this parent was unable to get an appointment with Dr. A.

In conclusion, the aim of this capstone project was to identify the areas of practice that UK DCFM could improve upon to attract more pediatric patients. Upon surveying three patient groups from the clinic, it was discovered through quantitative analysis that being able to contact providers after hours, and being able to make appointments for the whole family in one place were more important to the pediatric group than the pregnant and reproductive aged groups. Through the

qualitative analysis, it was discovered that having a relationship with the child was an important quality for the provider to possess. It was also found out that the department needed to improve on the continuity of care due to factors such as residents leaving. In response, some of the key recommendations that were made to address the issues brought up were: to work with residents to on incentives that might encourage them to stay beyond their residencies, to hire more providers that have undergone an OB or MCH Fellowship, and to include more residents in quality improvement projects.

**Appendix A: Cover Letter Example and Surveys**

January 25th, 2016

Dear Patient,

We write to request your help to improve the quality of care for patients at the UK Family & Community Medicine clinic.

We have developed a short survey and would greatly appreciate your voluntary participation. These surveys are confidential and anonymous. The surveys will be kept in a locked storage file until the surveys are reviewed, and after which, all written copies will be shredded. We will use the information to try to improve the clinic.

Enclosed is a stamped and self-addressed envelope for you to mail your completed survey. We will be appreciative if you could mail the survey by February 5th, 2016.

Sincerely,

Dr. Jonathan Ballard  
Medical Director  
UK Family and Community Medicine Clinic

Manisha Vasishta  
Master of Public Health Student  
University of Kentucky





- b. Easy to make a *same day* appointment: 1 2 3 4 5
- c. Amount of time you have to wait in the waiting room: 1 2 3 4 5
- d. Ability to see the provider that you wish: 1 2 3 4 5
- e. Able to contact provider after hours: 1 2 3 4 5
- f. Other positive experiences:

10. On a scale of 1-5, with 5 being the highest, how would you rate your care at this clinic?

1 2 3 4 5

What are some areas that we could improve?

Please feel free to provide any additional questions or comments:

**Community and Family Health Survey (Pregnant Women)**

1. Age: \_\_\_\_\_
2. Gender: \_\_\_\_\_
3. Race: \_\_\_\_\_
4. How did you find out about UK Family and Community Medicine (FCM) clinic?
  - a. Advertisement (Please specify where: \_\_\_\_\_)
  - b. Family Referral
  - c. Friend Referral
  - d. Brochure
  - e. School Employee (i.e. Nurse, Teacher, etc)
  - f. Daycare center
  - g. Other: \_\_\_\_\_
5. Why did you originally choose to come to our clinic?
  - a. Proximity to home
  - b. Proximity to school/place of work/etc.
  - c. Name familiarity
  - d. Ability to make appointments for the entire family in one place
  - e. Ability to make appointments for the entire family in one place
  - f. Your insurance is accepted at our practice
  - g. Your insurance requires you seek care at UK Health Care
  - h. Other: \_\_\_\_\_
6. If you have not yet delivered: What are some factors in deciding to continue your child's care with us?
  - a. If not, where do you plan to take your child for care?
7. What are some qualities that you look for in a provider for your child?

Please answer the following questions on a scale of 1-5, with 1 being the least important, and 5 being the most important.

8. What factors are important for you in deciding where to take your baby for care?
  - a. The practice accepts your insurance: 1 2 3 4 5
  - b. You already have a relationship with the provider: 1 2 3 4 5
  - c. You were able to find a provider you liked: 1 2 3 4 5
  - d. Proximity to home/school/place of work/etc: 1 2 3 4 5
  - e. Other important factors:
  
9. What were some of your positive experiences at this clinic?
  - a. Ease of making an appointment: 1 2 3 4 5
  - b. Ease of making a *same day* appointment: 1 2 3 4 5
  - c. Length of wait times: 1 2 3 4 5
  - d. Ability to see the provider that you wish: 1 2 3 4 5
  - e. Can contact provider after hours with questions/concerns: 1 2 3 4 5
  - f. Other positive experiences:
  
10. What is the likelihood of recommending our practice to other pregnant women?
 

1 2 3 4 5
  
11. On a scale of 1-5, with 5 being the highest, how would you rate your overall care at this clinic?
 

1 2 3 4 5
  
12. What are some areas that we could improve?

Please feel free to provide any additional questions or comments:

**University of Kentucky Family and Community Medicine Clinic Survey (Childbearing Age)**

1. Age: \_\_\_\_\_
2. Gender: \_\_\_\_\_
3. Race: \_\_\_\_\_
4. How did you find out about UK Family and Community Medicine (FCM) clinic?
  - a. Advertisement (Please specify where: \_\_\_\_\_)
  - b. Family Referral
  - c. Friend Referral
  - d. Brochure

- e. School Employee (i.e. Nurse, Teacher, etc)
  - f. Daycare center
  - g. Other: \_\_\_\_\_
5. Why did you originally choose to come to our clinic?
- a. Proximity to home
  - b. Proximity to school/place of work/etc.
  - c. Name familiarity
  - d. Ability to make appointments for the entire family in one place
  - e. Your insurance is accepted at our practice
  - f. Your insurance requires you seek care at UK Health Care
  - g. Other: \_\_\_\_\_
6. Are you aware that the UK Family and Community Medicine Clinic treats children and adolescents? (Y/N)
7. Do you have children? (Y/N)  
*Please skip to question ten (10) if you do not have children or do not plan to have children.*
- a. Does your child also receive their medical care at the UK Family and Community Medicine Clinic? (Y/N)
  - b. If not, where does your child receive medical care? \_\_\_\_\_
  - c. If your child receives medical care at another clinic, what is the primary reason that is a patient at that clinic? \_\_\_\_\_
8. What qualities do you look for in a medical clinic for children?  
*Please answer the following questions on a scale of 1-5, with 1 being the least important, and 5 being the most important.*
- a. The practice accepts your insurance: 1 2 3 4 5
  - b. You already have a relationship with the provider: 1 2 3 4 5
  - c. You were able to find a provider you liked: 1 2 3 4 5
  - d. Proximity to home/school/place of work/etc: 1 2 3 4 5
  - e. Other important factors:
9. What qualities do you look for in a medical practitioner for your children?
10. What are some of your experiences at this clinic?
11. *Please answer the following questions on a scale of 1-5, with 1 being the worst, and 5 being the best.*
- a. Ease of making an appointment: 1 2 3 4 5
  - b. Ease of making a *same day* appointment: 1 2 3 4 5
  - c. Length of wait times: 1 2 3 4 5
  - d. Ability to see the provider that you wish: 1 2 3 4 5

- e. Can contact provider after hours with questions/concerns: 1 2 3 4 5
- f. Other positive experiences: 1 2 3 4 5

12. On a scale of 1-5, with 5 being the highest, how would you rate your overall care at this clinic?

1      2      3      4      5

13. What are some areas that we could improve?

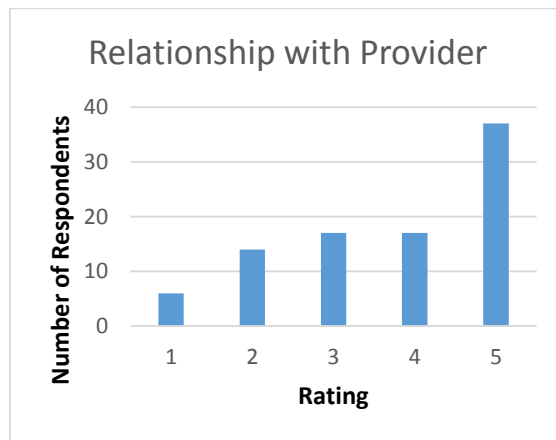
14. Please feel free to provide any additional questions or comments.

**Appendix B: Figures**

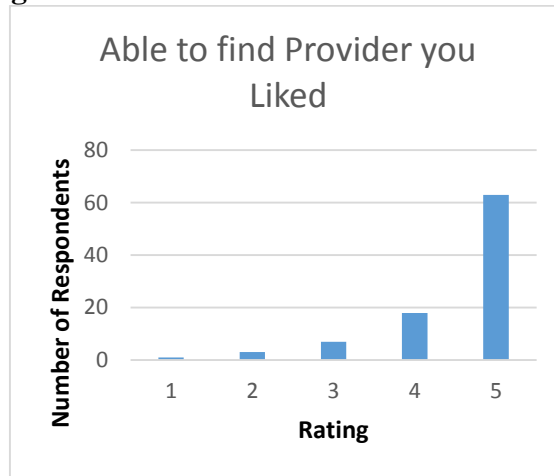
**Figure 3: Practice Accepts your Insurance**



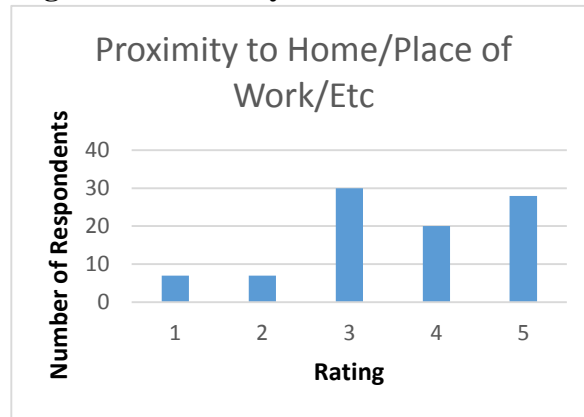
**Figure 4: Relationship with Provider**



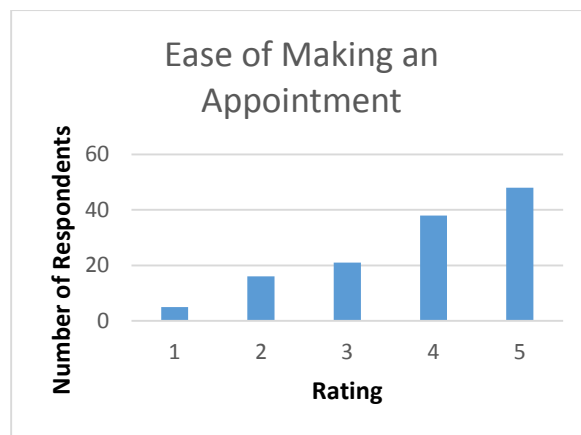
**Figure 5: Able to Find a Provider You Liked**



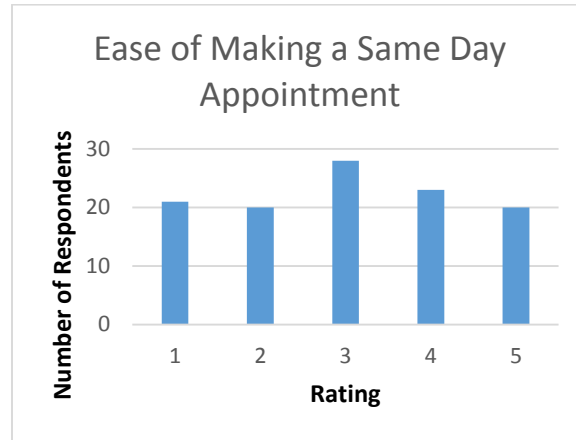
**Figure 6: Proximity to Home/Place of Work/Etc.**



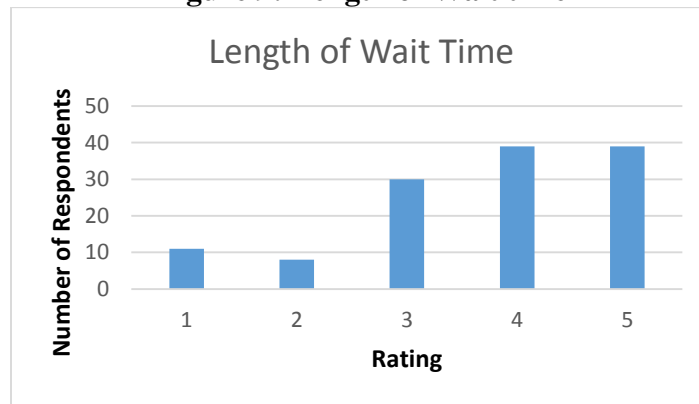
**Figure 7: Ease of Making an Appointment**



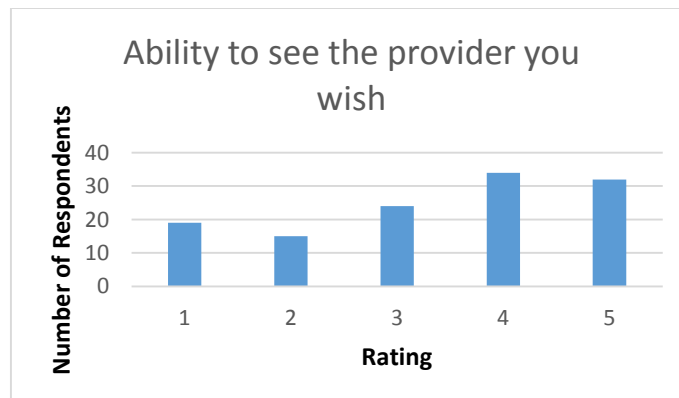
**Figure 8: Ease of Making a Same Day Appointment**



**Figure 9: Length of Wait time**

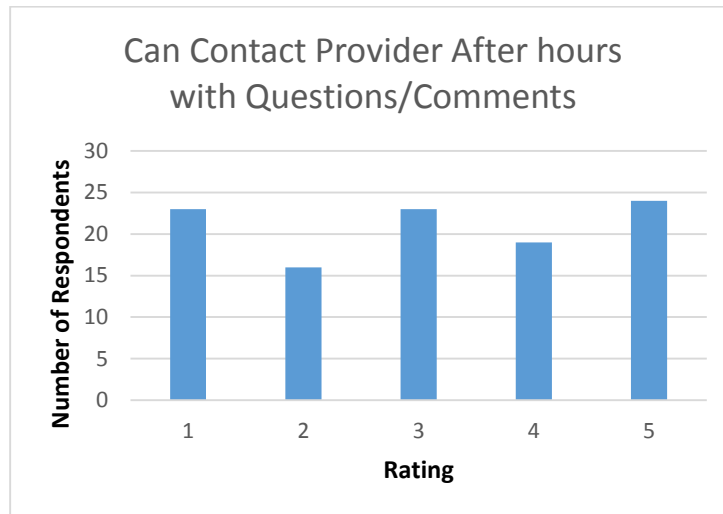


**Figure 10: Ability to see the provider you wish**

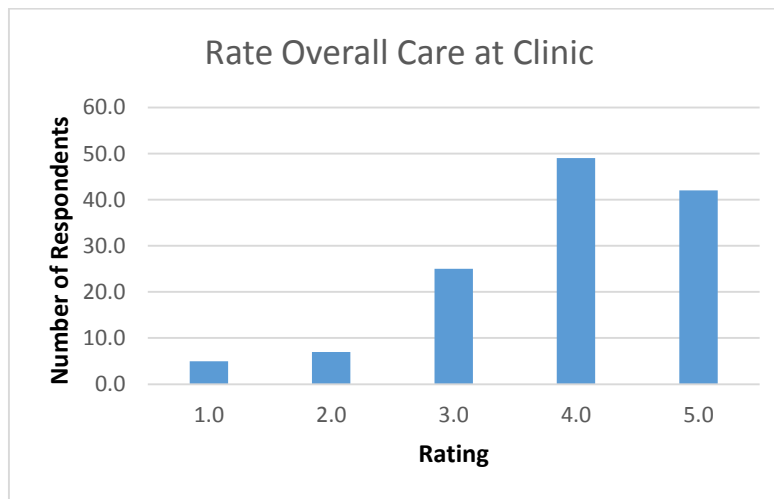




**Figure 11: Can contact provider after hours with Questions/Comments**



**Figure 12: Rate overall Care**



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### Biographical Sketch

Manisha Vasishta received her B.A. in Public Health Policy with a minor in Urban and Regional Planning from the University of California, Irvine. She then went on to receive her Master of Public Health and certificate in Maternal and Child Health from the University of Kentucky.