

Adult Inpatient Training for a Family Practice Residency: A University- Versus Community-based Setting

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Background and Objectives: *Some educators have expressed concern about the quality of inpatient training received by family practice residents in community-based residency programs because of insufficient patient numbers and resources in those programs. This study compared the number, diagnoses, and lengths of stay of patients seen by first-year family practice residents in a large inner-city, university-based medical center's internal medicine service versus those in a family practice teaching service in a smaller, community-based suburban regional hospital. Methods:* The adult inpatient training services of the two training sites were compared for 6 months to determine if any differences existed between the sites in patients' age, gender, primary and secondary diagnoses, average length of hospital stay, or in the number of monthly admissions. **Results:** A total of 247 patients were admitted to the teaching service of the suburban community hospital, while 317 patients were admitted to the teaching service at the university hospital. The average length of stay for the suburban hospital was 6.1 days and 5.7 days at the university hospital. A total of 107 different diagnoses were made on admission at Kenner Regional Medical Center, while 90 were made at University Hospital. Chest pain/angina was the most frequent diagnosis encountered at admission at both hospitals. **Conclusions:** Based on the two inpatient services studied, a broad variety of diagnoses and patient demographics are encountered at community-based hospitals, with similar numbers of patients, lengths of stay, and variation in diagnoses in comparison to an urban-based university hospital. The results indicate that there can be adequate numbers of patients and diagnostic variability to permit effective inpatient teaching at community-based hospitals.

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The Residency Review Committee (RRC) for Family Practice of the Accreditation Council for Graduate Medical Education (ACGME) mandates that family practice residents receive training in inpatient adult medicine. Learning opportunities for inpatient adult medicine exist in many different settings, ranging from large university-based teaching hospitals to smaller regional community hospitals. Educators and the RRC have expressed concern about the quality of residency training in the latter sites due to insufficient patient numbers and resources.¹ This has prompted some academicians to study and compare the experiences encountered by residents in these settings.²

Two such studies, one at a US army medical center and the other in a small rural midwestern community hospital, showed that both settings provided adequate adult inpatient medicine training for family practice residents.^{2,3} Another study, this one involving internal medicine residents, showed that tertiary care and regional hospital settings offered similar learning experiences.⁴

Only one previous study compared adult inpatient experiences in family practice and internal medicine residency services.⁵ Both services were in the same location: a large, multi-specialty teaching hospital. The total number of patients in the two groups were equivalent, but family practice residents managed a greater percentage of cardiovascular patients, while internal medicine residents managed a greater number of gastrointestinal and endocrine patients. Length of hospitalization was found to be similar for both services.⁵

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To our knowledge, however, there are no studies comparing the inpatient medicine training experiences of the same family practice residency in two different settings. Our current study compares first-year family practice residents' inpatient experiences in a large urban university-based teaching hospital to their experiences in a small suburban community hospital. Our main objective was to determine if there were differences between the two settings in patient volume, diagnoses, and lengths of stay.

Methods

Human Subjects Protection

This research project received exempt approval in May 2000 from Louisiana State University School of Medicine, New Orleans.

Setting

Our family practice residency uses two different hospitals for inpatient care. One is University Hospital (UH) in New Orleans, a 570-bed tertiary care teaching hospital located in the heart of New Orleans, a metropolitan city with a population of around 450,000. The other is Kenner Regional Medical Center (KRMC), a 90-bed community-based hospital located about 15 miles from New Orleans in the suburban city of Kenner that borders several rural counties.

The residency program's inpatient adult medicine teaching involves 2 months during the first year of residency. The first of these months is spent on UH's internal medicine inpatient service. This service is staffed by one attending physician and one senior internal medicine resident, both of whom supervise three junior residents, one of whom is a family practice resident. The second month is spent on the inpatient adult family practice service at KRMC. This service is staffed by a family practice attending physician who supervises one upper-level and two first-year family practice residents.

Data Collection

Each day, both residency inpatient services routinely generate a "Patients' Daily Census" report for purposes of monitoring the educational experience of residents. Each census form contains patients' identification numbers, age, date of admission and discharge, and primary and secondary diagnoses. The information from these forms was extracted for use as data in this study.

Data Analysis

Data were collected during March, May, July, August, October, and December 2000, for a total of 6 months. At the end of 6 months, we computed descriptive statistics for key parameters describing the activity of the two clinical services. These parameters included number of monthly admissions, average length of hos-

pital stay, patients' age, and primary and secondary diagnoses. We then conducted a statistical analysis to determine if there were significant differences between the two training sites in any of these parameters. Differences between means were tested with two-sample independent *t* tests, and differences in proportions were tested with the chi-square statistic. All statistical computations were made with the SPSS[®] for Windows.

Results

Number of Patients and Lengths of Stay

The total number of patients seen over the 6-month study period at KRMC was 247 and at UH was 317. Each first-year resident was responsible for approximately 21 patients per month at KRMC; at UH, each first-year resident saw approximately 18 patients per month—this difference was not statistically significant ($P=.11$). Significantly more patients were male at UH than at KRMC (55.2% versus 37.7%, $P<.001$).

The average length of stay for a patient at KRMC was 6.1 days, while the average length of stay at UH was 5.7 days; this difference was not statistically significant ($P=.175$). The average age of the patients at KRMC was 60.348 years, whereas at UH it was 52.511 years; this difference was statistically significant ($P<.001$).

Most Common Diagnoses

There were 107 different principal diagnoses for patients admitted to KRMC and 90 at UH. Table 1 lists the top 20 principal diagnoses for the two services. The top diagnoses by medical subspecialty groupings are listed in Table 2. Chest pain/angina was the most commonly seen diagnosis at both hospital inpatient services during the 6 months. A total of 32 cases of chest pain were diagnosed at KRMC and 45 cases at UH. The average length of stay for patients with chest pain was 4.0 and 4.3 days at KRMC and UH, respectively (not a significant difference).

Discussion

This study shows that family practice residency training in a suburban hospital provides an experience in adult inpatient care that is comparable to that encountered on an internal medicine rotation at a university hospital, at least in terms of number of patients seen and the most common diagnoses. There is a similarity in patient load at each hospital, both quantitatively based on number of patients and qualitatively based on mix of diagnoses, despite the fact that one of the teaching hospitals is a relatively small suburban hospital. The only differences we found between the two hospitals in patient characteristics were minor differences in patients' age and some variations in diagnoses that occurred in low frequency.

Table 1

List of Top 20 Diagnoses at Adult Inpatient Service at University Hospital and Kenner Regional Medical Center

<i>University Hospital</i>		<i>Kenner Regional Medical Center</i>	
Chest pain/angina	45	Chest pain/angina	32
CHF exacerbation	27	Urinary tract infection	11
Pneumonia	25	Acute coronary syndrome	10
Gastrointestinal bleed	13	Pneumonia	9
Cellulitis	13	Dehydration	8
Atrial fibrillation	12	Abdominal pain	7
Asthma exacerbation	11	Cerebrovascular accident	6
Acute mental status changes	10	Diabetic ketoacidosis	6
Syncope	9	Anemia	6
Diabetic ketoacidosis	7	CHF exacerbation	5
Acute coronary syndrome	6	Gastrointestinal bleed	5
Pancreatitis	6	Sickle cell pain crisis	5
Cerebrovascular accident	5	Cellulitis	5
Hypertension	5	COPD exacerbation	5
Dehydration	5	Respiratory failure	5
Crohn's Disease	4	Diabetes mellitus	4
Sickle cell crisis	4	Hip fracture	4
Alcohol withdrawal	4	Bacterial endocarditis	3
Endocarditis	3	Transient ischemic attack	3
Cirrhosis	3	Acute pancreatitis	3

CHF—congestive heart failure

COPD—chronic obstructive pulmonary disease

Our findings are important because the ACGME RRC for Family Practice has expressed concern about the training experience in smaller hospitals.¹ Based on the results of our study, this concern may be unwarranted.

The results of our study support those of Holten and David, who reported that family practice residents can have an adequate inpatient training experience in an 80-bed rural hospital.² Our results also confirm the results of O'Brien et al, who found that the patient problems encountered by internal medicine residents in the regional and tertiary care settings were similar.⁴

Limitations

This study is limited by the absence of a gold standard for what constitutes optimal inpatient adult medicine training for family practice residents. That is, although our study demonstrated that residents in the two settings encountered similar numbers of patients with a similar mix of diagnoses, we cannot confirm that teaching and learning in each setting is of similar quality. Nor can we confirm from our data that the approach to patient care in the two settings was similar, though we have no reason to believe it was not.

Another limitation is that our 6-month study only sampled a few hundred admissions at each site. This made it difficult to ascertain if diagnoses occurring at

relatively low frequency were seen at a similar rate at both sites. For example, during the study period, our residents at UH saw no patients with chronic obstructive pulmonary disease, while residents at KRMC did see such patients. Similarly, residents at KRMC saw no patients with cirrhosis of the liver, while residents at UH saw such patients. Therefore, while the most-common diagnoses at both hospitals were the same, and while the variability of diagnoses was similar, our data limits us from saying with certainty that the diagnoses seen were the same at each hospital.

A third limitation is that this study was conducted in only one family practice residency in one location. We cannot assure that our results can be generalized to residency programs or hospitals in other locations.

Finally, we only collected our data for 6 months, and there may have been seasonal variations in hospital admission rates that we did not detect with our sampling methods. The concern about seasonal variations is minimized, however, by the fact that we sampled admissions during multiple, non-consecutive months throughout the year.

Conclusions

The majority of family practice training in the United States occurs unopposed (ie, other major subspecialty training is not present) in community hospitals. Our study supports the premise that training in such settings, at least in terms of exposure to numbers and variety of adult inpatients, is adequate. If our results are confirmed by more-extensive studies in other sites, we believe that medical educators should accept the premise that inpatient training can be similar at university-based and community-based hospitals.

Finally, our study has implications for training in rural hospitals. It is known that training in rural hospitals

Table 2

Comparison of Patient Distribution by Specialty Diagnostic Group

<i>Kenner Regional Medical Center</i>		<i>University Hospital</i>	
<i>Diagnosis Group</i>	<i>Total</i>	<i>Diagnosis Group</i>	<i>Total</i>
Cardiovascular	75	Cardiovascular	113
Infectious disease	31	Pulmonary	45
Gastrointestinal	27	Gastrointestinal	40
Pulmonary	23	Infectious disease	30
Hematology/oncology	22	Miscellaneous	24
Miscellaneous	18	Neurology	15
Endocrinology	16	Hematology	13
Neurology	15	Endocrinology	13
Musculoskeletal	8	Oncology	10
Nephrology	4	Renal	8
Metabolic	3	Musculoskeletal	3
Surgery	2	Metabolic	2
Gynecology	2	Surgery	1

may encourage residents to practice in rural health shortage areas. Indeed, many physicians locate their practices in areas near where they trained.⁶ If the results of our present study were extended to show that inpatient training in rural hospitals contains adequate numbers of patient and sufficient diagnostic mix, it might increase the imperative for residency training in such rural settings.

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