

## Research Article

# Regional Medical School Campuses with an Emphasis on Primary Care May Increase the Number of General Internal Medicine Physicians

J. Grier Stewart<sup>1</sup>, Scott L. Arnold<sup>1</sup>, and Daniel M. Avery<sup>2\*</sup>

<sup>1</sup>Department of Family, Internal and Rural Medicine, University of Alabama, USA

<sup>2</sup>Department of Community and Rural Medicine, University of Alabama, USA

**\*Corresponding author**

Daniel M. Avery Jr, Department of Community and Rural Medicine, University of Alabama, 850 5th Avenue East, Tuscaloosa, AL 35401, USA, Tel: 205-348-1366; Fax: 205-348-9417; Email: davery@ua.edu

Submitted: 12 October 2016

Accepted: 16 February 2017

Published: 19 February 2017

ISSN: 2379-0547

**Copyright**

© 2017 Avery et al.

OPEN ACCESS

**Keywords**

• Increasing general internal medicine physicians

**Abstract**

**Background:** The College of Community Health Sciences in Tuscaloosa, Alabama is the Tuscaloosa Regional Campus of the University Of Alabama School Of Medicine. The mission of the regional campus is to train medical students and residents to provide primary care to rural, underserved communities of Alabama. There has been no prior study which examined where medical school graduates eventually practice and what they practice.

**Materials and methods:** A list of graduating medical students assigned to the Tuscaloosa Regional Medical Campus from 1974 to 2015 was obtained from the main campus published records in Birmingham, Alabama. This list contained the years of matriculation and graduation, complete date of graduation, etc. The database was expanded to include practicing specialty and place of practice, board certification, primary care and other pertinent information.

**Results:** Information was obtained on all 850 medical students assigned to the Tuscaloosa Regional Campus of the University Of Alabama School Of Medicine who have matriculated during the period of 1974 to 2015. The second top matched specialty was Internal Medicine and the second top practiced specialty after residency training was Internal Medicine. One hundred fifty-seven graduates matched into internal medicine and ninety-eight practices or have practiced general internal medicine from 1974 to 2015

**Conclusion:** Sixty-two percent of graduating medical students matching into internal medicine and med/peds, have practiced general internal medicine and general med/peds compared to the national average of 20%. Even over the past 15 years since fellowship training and sub specialization have increased, 50% of graduates matching into internal medicine and med/peds have practiced general internal medicine and general med/peds today. The real answer to producing more GIM physicians may be at the medical school level with regional medical school campuses who have the expertise and emphasis on primary care.

**INTRODUCTION**

A Regional Medical Campus (RMC) is a medical school campus separate from the main medical school at which a portion of pre-clinical or clinical training of medical students is carried out and is overseen by a regional administrative officer who may be a dean [1]. RMC's may be a regional basic science campus or a regional clinical campus [1]. Many medical schools have developed regional campuses to help address the shortage of physicians in rural, underserved areas [2]. Training at a RMC has a positive effect on choosing primary care and family medicine by exposing medical students to family physicians, primary care providers, patients, community hospitals and the needs of rural, underserved areas [2,3]. The College of Community Health Sciences (CCHS) was created in 1972 by a special act of the Alabama Legislature as the Tuscaloosa Regional Campus of the University Of Alabama School Of Medicine [4]. The goal of the school was education of third and fourth medical students and family medicine residents to provide care to the rural, underserved communities of Alabama and the Southeast [4].

Medical schools often report the number of medical students matching into primary care as their production of primary care physicians [5]. This is called the "dean's lie" because this number is inflated and overestimates the number of graduates who will actually practice primary care [6]. Matched specialty does not always predict what a physician may choose to practice or where he or she may practice ultimately. Medical students are difficult to track after their PGY1 year. Many medical schools lack the information technology to keep up with this data and do not continue to track it. Residents change specialties, training programs, career plans, and even professions. Female physicians may change their last name if they marry divorce or remarry. A small number of residents are dismissed, do not have their contracts renewed, develop licensure issues, become disabled, quit practicing medicine altogether or even expire. Where graduated medical students eventually practice and what they practice is of great interest to this regional campus in consideration of its mission statement to train physician for the rural, underserved areas of Alabama. There has been no prior

study that examined where medical school graduates eventually practice and what they practice.

General Internal Medicine (GIM), General Pediatrics (GP), Family Medicine (FM) and General Med/Peds (GMP) comprise the primary care specialties. They play an integral role in the provision of primary healthcare in this country. However, our training programs are not producing enough primary care providers including general internal medicine and a serious shortage are projected for the future [7]. General Internal Medicine is a less common career pathway than in the past and the majority of internal medicine residency graduates pursue subspecialty medicine. In the 1970's, 50% of graduating medicine residents pursued GIM careers, but that has fallen to 20% to 25% today [7,8]. Increasing the number of medical students and the number of internal medicine residency programs has not increased the number of primary care providers [7]. Declining applications to medical schools suggest less interest in medicine as a career [9]. There continues to be a decrease in medical students choosing primary care careers with the risk of insufficient numbers of Primary Care Providers (PCPs) [7]. This is at a time we need more GIM physicians and other PCPs [7]. Alabama remains in the lowest density of active physicians per 100,000 population and the need for PCP remains high [10].

Most internal medicine resident graduates today pursue subspecialty fellowship training and careers for a variety of reasons. Only 19.9% to 21.5% of current internal medicine residents plan a General Internal Medicine career [11]. Virginia Mason Hospital and Medical Center has reported a primary care practice rate of "about 40 percent" which is the highest we have found in the literature [12]. General Internal Medicine careers are more common with women and less common with men and international medical graduates [7,11,13]. In 2016, the majority of graduating internal medicine residents will practice medical subspecialties [7]. The percentage of medical school graduates interested in a generalist career has been decreasing over time [14].

### Why medical students are not interested in general internal medicine careers today

There are a number of reasons that medical students matching into internal medicine are not interested in general internal medicine careers. These are listed in (Table 1) and discussed below.

**Medical school debt:** The high cost of medical education today and the associated debt incurred by many medical students has influenced specialty choice [15]. Middle income students concerned about medical school debt are less likely to choose primary care careers [16]. The average medical school debt for 49% of internal medicine residents is \$150,000 while 35% owe more than \$200,000 [17].

**Postgraduate subspecialty fellowships:** Many primary care residency graduates will pursue fellowship training and subspecialty careers [8]. The number of medical students matching into General Internal Medicine, General Pediatrics, Family Medicine and General Med/Peds Residencies overestimates the number of physicians who will actually practice these specialties because so many choose fellowship training to sub specialize.

**Decreasing market:** Some physicians feel that there is a decreasing market for general internal medicine physicians

**Table 1:** Why Medical Students are not interested in General Internal Medicine Careers.

Medical School Debt (15, 16, 17)
Postgraduate Subspecialty Fellowships (8)
Decreasing Market (8)
Complexity of Patient Care requiring Subspecialists (8)
Decreased Career Satisfaction (8)
Decreasing Income (8, 9)
Increasing Administrative Responsibility (9)
Decreasing Reimbursement (8, 17)
Interest in Non-Primary Care Specialties (8)

because of competition from mid-level providers in the outpatient setting and hospitalists in inpatient setting [8].

**Complexity of patient care requiring subspecialists:** There is an increased need for subspecialty care due to the complexity of some diseases and some patients requiring that level of subspecialty care [8].

**Decreased career satisfaction:** There is decreased career satisfaction among many general internists for a variety of reasons [8].

**Decreasing income:** There is decreasing income with an uncertain financial status for general internists [8,9].

**Increasing administrative responsibility:** There are increasing administrative responsibilities for primary care physicians outside of patient care such as Meaningful Use and Electronic Medical Records which are unavoidable but very time consuming [9].

**Decreasing reimbursement:** There is a widening gap in reimbursement between generalists and subspecialties [8]. Hospitalists get paid twice as much money for half as much work for the same education as most of the hospitalists at our institution work one week on and one week off. The average starting salary for General Internal Medicine is \$198,000 while Gastroenterology typically pays \$454,000 [17].

**Interest in non-primary care specialties:** Medical students have become more interested in the non-primary care specialties like radiology, pathology, anesthesiology, emergency medicine and physical medicine and rehabilitation for a variety of reasons including lifestyle and salary [8].

### Why medical students may be attracted to general internal medicine at regional campuses

The authors believe that there may be significant reasons that medical students may be attracted to GIM careers after training at a regional campus. There is an institution wide emphasis on primary care at this regional campus. In contrast to most medical schools, all department chairs are generalists. General Internal Medicine Faculty teaches medical students general and subspecialty internal medicine. Students appreciate that most rural communities and hospitals do not have medical subspecialists and general internal medicine and family medicine physicians provide subspecialty medical care. Medical students interested in primary care, family medicine, general internal medicine, general med/peds and general pediatrics may be

attracted to campuses that provide education in those areas. Prematriculation programs at our regional campus emphasize primary care. Medical students are exposed to inpatient hospital care provided by general internal medicine and family medicine primary care physicians working together.

## MATERIALS AND METHODS

The Institutional Review Board of the University of Alabama reviewed this project and determined that IRB approval was not applicable. A list of graduating medical students assigned to the Tuscaloosa Regional Medical School Campus from 1974 to 2015 was obtained from the main campus published records of the University Of Alabama School Of Medicine in Birmingham, Alabama. This list contained the years of matriculation and graduation, complete date of graduation, full names, preferred names, specialty choice, name and location of PGY1 institution and name and location of residency. The database was expanded to include training state to practicing state, practicing specialty, subspecialty, primary care or other, practicing matched specialty, city, state and address of practice, stayed in Alabama/left Alabama, zip code, rural or urban, board certification, matched into primary care, practiced primary care in Alabama and practiced primary care in rural Alabama (Table 2).

Information on each physician was obtained primarily from Google® website along with the American Board of Medical Specialties website, state license verification websites, Alabama Medical Licensure Commission website, the National Residency Program Match data, the University of Alabama Family Medicine Residency list of graduates and the College of Community Health Sciences list of the graduates. Data from internet sources was selected as the means of inquiry in order to obtain information on each graduate understanding that there may be some errors on the internet. It was felt that was acceptable method of inquiry in order to attempt to find information on each graduate. The database was then configured into a SPSS database so that descriptive statistics could be applied.

## RESULTS

Information was obtained on all 850 medical students who were assigned to the Tuscaloosa Regional Campus and graduated from the University Of Alabama School Of Medicine from 1974 to 2015. The majority of physicians were identified by their individual practice websites. The top matched specialties of medical students graduating from the Tuscaloosa Campus in order were Family Medicine (186 graduates, 21.9%), Internal Medicine (157 graduates, 18.5%), General Surgery (88 graduates, 10.4%), and Pediatrics (86 graduates, 10.1%) (Table 3). The top practicing specialties after residency training are Family Medicine (182 graduates, 24.8%), Internal Medicine (98 graduates, 13.3%), General Surgery (45 graduates, 6.1%) and Pediatrics (61 graduates, 8.3%), (Table 3). There are 116 graduates still in residency and fellowship training as of 2015.

One hundred fifty-seven graduates matched into internal medicine and ninety-eight have practiced general internal medicine from 1974 to 2015 (Table 4). Of those 98 physicians, one has died and one has retired. Fifty-nine graduates did not practice GIM and practiced 8 other internal medicine subspecialties (cardiology, pulmonary medicine, gastroenterology, endocrinology, hematology/oncology, infectious diseases, rheumatology, and nephrology) and eight other specialties

**Table 2:** Expanded Database of Tuscaloosa Regional Campus of the University of Alabama School of Medicine Graduates (1974-2015).

Matriculation Year	Residency Location
Graduation Year	Primary Care/Other
MD Granted Date	Rural/Urban Area
Full Name	Practicing Matched Specialty
Preferred Name	Practice Location
Specialty Choice	Practice State
PGY1 Specialty	Address
PGY1 Institution	Zip Code
PGY1 City	Telephone Number
PGY1 State	Stayed in Alabama/Left Alabama
Zip Code	Board Certification
Residency	Training State to Practice State

**Table 3:** Top Matched Specialties of 850 Graduates and Practiced Specialties of 734 Graduates Who Have Completed Residency Training from the Tuscaloosa Regional Campus University of Alabama School of Medicine (1974-2015)

Specialty	Matched # (%)	Practiced/Practicing # (%)
Family Medicine	186 21.9%	182 24.8%
Internal Medicine	157 18.5%	98 13.3%
Surgery	88 10.4%	45 6.1%
Pediatrics	86 10.1%	61 8.3%

(psychiatry, anesthesiology, pathology, dermatology, radiology, emergency medicine, physical medicine and rehabilitation, and neurology). One physician changed from general surgery into general internal medicine. Sixty-four percent of those graduates matching into med/peds have practiced general internal medicine and general med/peds.

Over the last 15 years, more physicians matching into internal medicine have subspecialized. Some have made career changes such as to hospital medicine. Thirty-two of 64 graduate matching into internal medicine and med/peds, practice general internal medicine and general med/peds. Still 50% of those matching into internal medicine and med/peds have practiced general internal medicine. We have not found an institution that comes close to these percentages.

## CONCLUSION

The College of Community Health Sciences has significantly met its mission over the last 4 decades of producing primary care providers for rural, underserved Alabama, the region beyond and the United States. An impressive 62% of graduates matching into internal medicine and med/peds have practiced general internal medicine and general med/peds compared to the national average of 20% [18]. Even over the past 15 years since fellowship training and sub specialization have increased, 50% of graduates matching into internal medicine and med/peds, have practiced general internal medicine and general med/peds today. An answer to producing more GIM physicians may be at the medical school level with regional medical school campuses that have the expertise and emphasis on primary care rather than residency programs.

**Table 4:** Primary Care Specialties: Match and Practice Distribution.

	Matched (N=850) %	Practicing (N=734)* %
Internal Medicine	157	18.5
General Internal Medicine	96	13.10%
Cardiology	11	1.40%
Pulmonary	2	0.30%
Gastroenterology	9	1.20%
Endocrinology	3	0.40%
Hematology/Oncology	9	1.20%
Infectious Diseases	1	0.10%
Rheumatology	4	0.50%
Nephrology	3	0.40%
Psychiatry	1	0.10%
Anesthesia	1	0.10%
Pathology	1	0.10%
Dermatology	1	0.10%
Radiology	2	0.30%
Emergency Medicine	1	0.10%
PM&R	1	0.10%
Neurology	2	0.30%
Practiced IM/Deceased	1	0.10%
Practiced IM/Retired	1	0.10%
Changed from Surgery to Internal Medicine	1	0.10%
Med/Peds	9	1.30%
General Med/Peds	4	0.50%
Internal Medicine	3	0.40%
Anesthesia	1	0.10%
Plastic Surgery	1	0.10%

There were several challenges to the study. The database is dynamic and continually changing. Websites may be inaccurate or out of date. There is very little institutional information about graduates after they complete the PGY1 year. Very few graduating interns forward new address information to their medical school. Female physicians are more difficult to tract because they often change their name as a result of marriage and/or divorce. Practicing physicians occasionally pursue second residencies, fellowships and postgraduate training midcareer. Using the internet to acquire information while may allow information on all physicians has the disadvantage of not being up to date, incorrect, inaccurate, etc. This database may be useful for determining specialty needs, residency needs, research, grant applications, training residents in one's home state, retaining trainees and negotiating with hospitals, residency programs, communities and state legislatures.

Matched specialty does not always predict what a physician may choose to practice nor where he or she may ultimately practice. Regional Medical Campuses with a focus on primary care may be a method to increase primary care in rural, underserved areas.

## REFERENCES

- Cheifetz CE, McOwen KS, Gagne P, Wong JL. Regional Medical Campuses: A New Classification System. *Acad Med.* 2014; 89: 1140-1143.
- Norris TE, Coombs JB, House P, Moore S, Wenrich MD, Ramsey PG. Regional Solutions to the Physician Workforce Shortage: The WWAMI Experience. *Acad Med.* 2006; 81: 857-862.
- Brokaw JJ, Mandzuk CA, Wade ME, Deal DW, Johnson MT, White GW, et al. The Influence of Regional Basic Science Campuses on Medical Students' Choice of Specialty and Practice Location: A historical Cohort Study. *BMS Med Educ.* 2009; 9: 1-12.
- University of Alabama School of Medicine. College of Community Health Sciences. Tuscaloosa Program. 1982.
- Porter S. Match Data Analysis: Small Growth in Primary Care Not Enough to Meet Expected Demand. *AAFP News.* 2014.
- Glenn B. How Medical Schools Consistently Cover Up Their Primary Care Failures. *Medical Economics.* 2013.
- Henderson D. Most Internal Medicine Residents Plan Subspecialty Careers. *Medscape Medical News.* 2012.
- Newton DA, Grayson MS. Trends in Career Choice by US Medical School Graduates. *JAMA.* 2003; 290: 1179-1182.
- Larson EB, Finn SD, Kirk LM, Levinson W, Loge RV, Reynolds E, et al. The Future of General Internal Medicine. Report and Recommendations from the Society of General Internal Medicine (SGIM) Task Force on the Domain of General Internal Medicine. *J Gen Intern Med.* 2004; 19: 69-77.
- Association of American Medical Colleges. 2015 State Physician Workforce Data Book.
- West CP, Dupras DM. Low Percentage of Medical Residents Plan to Practice General Internal Medicine. *JAMA.* 2012; 308: 2241-2247.
- Virginia Mason Hospital and Medical Center: Life after Graduation.
- Diehl AK, Kumar V, Gately A, Appleby JL, O'Keefe ME. Predictors of Final Specialty Choice by Internal Medicine Residents. *J Gen Intern Med.* 2006; 21: 1045-1049.
- Colwill JM, Perkoff GT, Blake RL, Paden C, Beachler M. Modifying the Culture of Medical Education: The First Three years of the RWJ Generalist Physician Initiative. *Acad Med.* 1997; 72: 745-753.
- Bland K, Isaacs G. Contemporary Trends in Student Selection of Medical Specialties. *Arch Surg.* 2002; 137: 259-267.
- Phillips JP, Weismantel DP, Gold KJ, Schwenk TL. Medical Student Debt and Primary Care Specialty Intentions. *Fam Med.* 2010; 42: 616-622.
- Merritt Hawkins. 2015 Survey. Final-Year Medical Residents. 2015.

### Cite this article

Stewart JG, Arnold SL, Avery DM (2017) Regional Medical School Campuses with an Emphasis on Primary Care May Increase the Number of General Internal Medicine Physicians. *J Family Med Community Health* 4(1): 1100.