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Presence and Characteristics of Student-Run Free Clinics in Medical Schools

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research is needed on whether increasing the number of bilingual residents, educating trainees on language services, or implementing medical Spanish courses as a supplement to (not a substitute for) interpreter use would improve care for LEP patients.[4,5]

This study has limitations. The data were based on self-report. However, a recent study found that clinicians' self-assessment correlated with their oral language assessment, particularly at the high and low ends.[6] Fifteen percent of applicants did not provide a self-identity and only 26 392 (49.8%) matched into an internship. The population actually entering internship may differ in their diversity or language proficiencies. Because of confidentiality, we do not know the relationship between applicant language proficiency and geographic matching of these skills to the local communities' language needs.

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Presence and Characteristics of Student-Run Free Clinics in Medical Schools

Student-run free clinics (SRFCs) are common in medical schools,[1-6] yet the current state of these clinics is not well described. The first national study of SRFCs conducted in 2005 described 111 SRFCs at 49 Association of American Medical Colleges (AAMC) member institutions.[1] We conducted this survey to assess whether there has been growth of SRFCs in medical schools and describe the characteristics of these clinics.

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Methods | We developed, pilot tested, and revised a survey instrument based on concepts addressed in the original survey,[1] a literature review, and ongoing discussions with SRFC leaders from across the country. The final survey contained 39 items including yes/no, multiple-choice, and open-ended responses. The University of Central Florida institutional review board certified this study as exempt.

We identified SRFCs and their medical student leaders through the Society of Student-Run Free Clinics. When contact information could not be located for a SRFC at a US AAMC member institution, we telephoned or e-mailed student affairs offices to confirm the presence or absence of a SRFC, and to identify a free clinic student leader. We sent an e-mail to student leaders of SRFCs from each US AAMC member institution with a SRFC asking them to complete a web-based questionnaire between December 2011 and April 2014. One response was requested from each institution summarizing data from all SRFC sites at their school. Respondents were encouraged to seek input from other students or faculty, to record actual figures when possible, or best estimates. The survey appears in the Supplement.

We analyzed data using descriptive statistics (Excel version 14.2.5, Microsoft Inc). We calculated percentages based on the number of responses to each question for all yes/no or multiple-choice answers. Missing data were accounted for by decreasing the denominator of respondents accordingly. Two of the authors (S.S., R.T.) independently examined open-ended responses for recurrent themes, coded responses, and compared for agreement until consensus was reached.

Results | We identified SRFCs at 106 of 141 (75.2%) US AAMC member institutions. The survey response rate was 81.1% (86/106). Two schools completed 1 joint survey because they work together at 1 SRFC. Therefore, the maximum number of responses to each survey item was 85 (range: 77-85 for multiple-choice questions except for budget-

Table 1. Reported Student-Run Free Clinic (SRFC) Operations at 86 MD-Granting US Medical Schools

	Mean (SD)[a]
No. of SRFC sites at each medical school (n = 85)	2.4 (2.1)
No. of patients seen per clinic session (n = 84)	15.1 (9.2)
No. of clinic sessions/wk (n = 81)	1.8 (1.8)
No. of patient rooms per clinic (n = 84)	5.3 (2.8)
Clinic duration, h (n = 84)	4.1 (1.1)
Average wait time, min (n = 81)	40.8 (35.5)
Total visit length, min (n = 81)	100.0 (50.6)
Staffing per clinic session (n = 84)	
Attending faculty	2.0 (1.5)
Medical students	
First-year	3.88 (2.65)
Second-year	3.71 (2.54)
Third-year	2.17 (2.02)
Fourth-year	2.23 (1.84)
Medical students involved in the SRFC, %	57.8 (27.9)
Overall budget (n = 49), $[b]	48 653 (146 886)
	No. (%)
Curricular component (n = 81)	
No academic credit available	43 (53.1)
Clinical elective	20 (24.7)
Preclinical elective	9 (11.1)
Preclinical core curriculum	5 (6.2)
Clinical core curriculum	4 (4.9)
Appointments (n = 83)	
>80% visits are scheduled	27 (32.5)
>80% of visits are walk-ins	38 (45.8)
Clinics are open year-round (n = 84)	72 (85.7)
Care is provided free of charge (n = 83)	77 (92.8)
>80% of patients are under 100% of federal poverty level (n = 60)	31 (51.7)
>90% of patients are uninsured (n = 75)	41 (54.0)
Funded for their role in SRFC	
Faculty (n = 74)	12 (16.2)
Administrative staff (n = 74)	20 (27.0)
Clinic location (n = 85)	
Community clinic	43 (50.6)
Medical office building	24 (28.2)
Church	18 (21.2)
Homeless shelter	17 (20.0)
Mobile unit	8 (9.4)
Battered women's shelter	8 (9.4)
Street outreach	7 (8.2)
Public school	4 (4.7)
Medical school	3 (3.5)
Hospital	1 (1.3)
Other	14 (16.5)
Electronic health records used (n = 84)	37 (44.1)
SRFC has a website (n = 82)	75 (91.5)
Interprofessional partners (n = 82)	
Interprofessional partners involved in SRFC	62 (72.9)
Prehealth professional students[c]	45 (54.9)
Pharmacy students	36 (43.9)
Nurses	36 (43.9)
Pharmacists	34 (41.5)
Social workers	34 (41.5)
Community volunteers	33 (40.2)
Public health students	31 (37.8)
Nursing students	25 (30.5)
Social work students	23 (28.1)
Physician assistant students	20 (24.4)
Dental students	19 (23.2)
Dentists	15 (18.3)
Physician assistants	8 (9.8)
Legal students	6 (7.3)
Lawyers	5 (6.1)

[a] Some response categories were not mutually exclusive because there were multiple clinic sites per institution.

[b] Median (range) is $12 000 ($0-$1 000 000).

[c] Includes undergraduate, postbaccalaureate, master's degree, or PhD students who plan to enter a health-related professional school (medical, nursing, dental, etc).

related items, which had 49-74 respondents; 60-67 for open-ended items).

The 86 responding institutions reported 208 SRFC sites. **Table 1** provides details regarding clinic operations. More than half of medical students were reported to be involved in SRFCs (mean [SD], 57.8% [27.9%]), including first- through fourth-year students. Fifty-three percent (43/81) of institutions reportedly offered no academic credit for participation.

Table 2 summarizes the broad range of services provided by SRFCs, including chronic disease management, specialty care, imaging, laboratories, pharmaceuticals, and interdisciplinary services. The most common diseases treated in SRFCs were diabetes (58/77; 75.3%) and hypertension (58/77; 75.3%).

In open-ended responses, students identified the greatest strengths of SRFCs as serving the underserved (50/60; 83.3%) and student education (47/60; 78.3%). The biggest challenges were obtaining sufficient faculty staffing (26/60; 43.3%) and funding (19/60; 31.7%).

Discussion | The number of AAMC member institutions with a SRFC has more than doubled since the last national survey was conducted 9 years ago[1] and SRFCs are now present at more than 75% of medical schools. Despite the lack of academic credit at many institutions, most medical students are volunteering in this setting. Given the ubiquity of SRFCs in the education of future physicians, further research is needed to assess their educational and clinical outcomes. Small single-institution

SRFC studies have documented high-quality patient care in diabetes, hypertension, and mental health.[4-6]

This survey did not include the many SRFCs hosted by osteopathic or interdisciplinary schools. Limitations of this study include the collection of data by self-report from a student leader, and a variable number of responses per item.

The lack of funding and sufficient faculty supervisors identified as the biggest challenges in SRFCs are actionable items because institutional support could help stabilize and improve these educational opportunities for years to come.

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Drafting of the manuscript: Smith, Thomas, Cruz.
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Additional Contributions: Ellen Beck, MD (University of California, San Diego), initiated the first national conference on student-run free clinics as a 2008 Society of Teachers of Family Medicine preconference workshop and has been a lead faculty advisor to the Society of Student-Run Free Clinics, through which this collaboration and survey project was made possible. No compensation was provided to Dr Beck for her work on this project. We thank the members and leadership of the Society of Student-Run Free Clinics as well as the student leaders, faculty, volunteers, and patients from across the country.

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Table 2. Reported Services and Consultations Provided by Student-Run Free Clinics at 86 MD-Granting US Medical Schools

	No. (%)
Core services (n = 81)	
Outpatient adult medicine	81 (100.0)
Health care maintenance	68 (84.0)
Chronic disease management	61 (75.3)
Language interpreters	47 (58.0)
Social work	41 (50.6)
Psychology/counseling	39 (48.1)
Nutrition	37 (45.7)
Urgent care	33 (40.7)
Pediatrics	32 (39.5)
Outreach	31 (38.3)
Medical procedures	29 (35.8)
Physical therapy	18 (22.2)
Dental	16 (19.8)
Legal	7 (8.6)
Acupuncture	1 (1.2)
Onsite specialty consultations (n = 68)	55 (80.9)
Pharmacy services (n = 81)	
Written prescriptions to be filled elsewhere	75 (92.6)
Medications are free of charge	58 (71.6)
Over-the-counter medications	47 (58.0)
Patient assistance programs	43 (53.1)
Onsite pharmacy or dispensary	42 (51.9)
Laboratory services (n = 80)	
Fingerstick glucose	67 (83.8)
Pregnancy test	65 (81.3)
Urinalysis	62 (77.5)
Blood draws onsite	55 (68.8)
Fecal occult blood test	43 (53.8)
Rapid HIV test	40 (50.0)
Rapid streptococcal test	37 (46.3)
Fingerstick hemoglobin	32 (40.0)
Blood draws offsite	14 (17.5)
None	5 (6.3)
Imaging (n = 79)	
Radiograph	42 (53.2)
Ultrasound	44 (55.7)
Computed tomographic scan	49 (62.0)
Magnetic resonance imaging	49 (62.0)
Procedures (n = 79)[a]	
Small procedures (eg, lipoma removal)	21 (26.6)
Outpatient surgeries (eg, hernia repair)	15 (19.0)
Inpatient surgeries (eg, hysterectomy)	11 (13.9)
None	45 (57.0)
Most common diagnoses (n = 77)	
Diabetes	58 (75.3)
Hypertension	58 (75.3)

Abbreviation: HIV, human immunodeficiency virus.

[a] Includes those arranged off-site.

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COMMENT & RESPONSE

Stroke Risk Following Perioperative Atrial Fibrillation

To the Editor The study by Dr Gialdini and colleagues[1] evaluated the long-term risk of ischemic stroke in patients with perioperative atrial fibrillation (AF). There is a methodological issue that arises with the use of administrative data to draw clinical inferences.

According to the sensitivity (88%) and specificity (86%) of the diagnosis codes given in the text, as well as the prevalence of AF of 1.43%, the positive predictive value of a diagnosis of perioperative AF in this study would only be 8.4%. In other words, a patient would be much more likely not to have the syndrome than to have it.

It would seem that this limitation presents a major methodological problem in deriving any meaningful conclusions regarding the association of a coded diagnosis of perioperative AF with subsequent cardiogenic stroke.

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1. Gialdini G, Nearing K, Bhave PD, et al. Perioperative atrial fibrillation and the long-term risk of ischemic stroke. *JAMA*. 2014;312(6):616-622.

To the Editor Dr Gialdini and colleagues[1] presented an analysis of stroke risk following perioperative AF. The authors tried to address potential confounders and acknowledged several limitations.

A key limitation is the lack of data on antithrombotic medication use. The observed difference in increased stroke risk associated with AF between noncardiac and cardiac surgery is surprising and counterintuitive. Cardiac patients are more likely to have risk factors for stroke. This is suggested by higher stroke rates following cardiac surgery in the absence of AF compared with noncardiac surgery (0.83% vs 0.36%, respectively).

The relatively smaller increase in risk of stroke observed with AF in the setting of cardiac surgery may be due to higher use of concomitant antithrombotic medications in cardiac conditions (ie, warfarin in valvular replacement, antiplatelet medications in coronary bypass), which may counteract the increased risk of stroke due to AF.

These data raise the possibility that stroke risk may be underestimated following perioperative AF and consequently that anticoagulation may be underused. Clear criteria for when anticoagulation should be started in patients who develop perioperative AF are lacking. The 2014 Guideline for the Management of Patients With Atrial Fibrillation gives a class IIa recommendation to the use of anticoagulation in perioperative AF,[2] and it only provides 1 supporting reference from a retrospective study in patients undergoing coronary bypass.[3]

In addition to uncertain benefits, bleeding risk during the perioperative period is a concern. Further study will need to clarify what the features are that lead to increased risk of stroke in patients with perioperative AF (such as CHA2DS2-VASC score, duration, or recurrent episodes) to select patients in which the balance of benefits and risks warrants anticoagulation. Clinical trials specifically designed to assess efficacy and safety of anticoagulation among patients with perioperative AF are needed.

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1. Gialdini G, Nearing K, Bhave PD, et al. Perioperative atrial fibrillation and the long-term risk of ischemic stroke. *JAMA*. 2014;312(6):616-622.

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3. Al-Khatib SM, Hafley G, Harrington RA, et al. Patterns of management of atrial fibrillation complicating coronary artery bypass grafting: results from the PRoject of Ex-vivo Vein graft ENgineering via Transfection IV (PREVENT-IV) Trial. *Am Heart J*. 2009;158(5):792-798.

In Reply Dr Kurlansky raises a concern about the positive predictive value of diagnosis codes used to identify perioperative AF in our study of the long-term risk of stroke associated with this condition. Two separate issues should be considered in this regard.

The sensitivity of 88% and specificity of 86% that we cited concerned the present-on-admission status for a given diagnosis code, not the diagnosis code itself. In other words, among patients with a documented diagnosis of AF during a surgical hospitalization, the present-on-admission indicator would be expected to be 88% sensitive and 86% specific for distinguishing cases of AF that were diagnosed prior to the hospitalization compared with new-onset cases during the hospitalization. Given a true prevalence of approximately 67% for preexisting AF in the perioperative setting,[1] the positive and negative predictive values for preexisting (as opposed to new-onset) cases of AF would be expected to be approximately 80% to 90%.

The second issue concerns the test characteristics of the AF diagnosis codes themselves in identifying true cases of AF, regardless of whether they were preexisting or new-onset cases. In this regard, failure to identify true cases of AF would be expected to result in nondifferential misclassification of cases that