THE FREE CLINIC RESEARCH COLLECTIVE

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Letter from the Editor: Introducing *The Free Clinic Research Collective*

Elizabeth Christine Lee
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It is my great pleasure to launch *The Free Clinic Research Collective* (*FCRC*), a peer-reviewed open access journal of The Medical Student Press (The MSPress). Our team has worked on this exciting publication project throughout the past year, and I am proud to finally present the inaugural issue.

The overall mission of *FCRC* is to strengthen the representation of free clinic service projects and to promote a humanistic philosophy of care among trainees and healthcare professionals. As the number of student-run free clinics in the U.S. continues to grow, it is increasingly important to understand the impact of these clinics on students' professional and altruistic development and to identify the distinctive features that sustain each free clinic's operations. Despite the significance of student-run free clinics in patient care and student education, there is a lack of published information on these endeavors. *FCRC* was created to address the dearth of publications and to promote thoughtful discussion of free clinic service-learning experiences in a centralized forum.

FCRC advances the dissemination of free clinic research findings, discussions on clinic workflow, and information on students' acquisition of clinical knowledge, attitudes towards patient-centered care, as well as awareness of healthcare disparities. We encourage all free clinic volunteers to submit research articles, viewpoint and reflection essays, and brief communications describing noteworthy program characteristics, which will serve as valuable information for free clinic leaders across multiple institutions. We also invite readers to comment on any published *FCRC* article by submitting a correspondence, which will be forwarded to the authors for a brief reply.

This inaugural issue of *FCRC* includes two research articles, six brief communications, and one reflection essay authored by medical, pharmacy, and physician assistant students as well as physicians at eight student-run free clinics affiliated with seven U.S. medical schools. The *FCRC* articles not only highlight the authors' accomplishments at their schools' student-run free clinics, but also emphasize system-based thinking, a core clinical competency. We hope to help readers gain a broader awareness of how healthcare system elements, such as interdisciplinary teamwork, operational and fiscal parameters of clinics, and socioeconomic and cultural barriers, holistically impact patient care delivery and outcomes.

The development of *FCRC* represents a cumulative effort by many individuals. Each article in this issue underwent a rigorous peer-review process, including initial screening, editorial review, and revision by authors. I would like to express my sincere thanks to Dr. Caroline Wellbery, *FCRC* faculty advisor, for her expert guidance and support of the journal's formation. My gratitude is extended to our entire MSPress team, especially the section editors, who provided robust editing services for the accepted articles, and the peer reviewers, who screened and reviewed each submission. I am also grateful to our Executive Team, especially Anna Artymowicz, MSPress Graphic Design Associate Editor, who designed the journal's layout. Finally, I am thankful to Mica Esquenazi, MSPress Editor-in-Chief, and Gabriel Glaun, MSPress Executive Editor, who originally initiated the idea of a student-run free clinic journal. From the inception of the journal policies to the release of the first issue, it has been my privilege to serve as the inaugural *FCRC* Associate Editor and to work with all the individuals who contributed to this journal.

With each successive issue, I am eager to see *FCRC* continue to prosper, building on its strengths and solid commitment to advancing scholarship and reflection. I encourage free clinic volunteers from schools across the U.S. to contribute to this centralized forum, creating a growing body of knowledge and stimulating fruitful discussion among our nation's budding healthcare leaders.

I have truly enjoyed working on this service project and being part of a pioneering community of scholars on the MSPress editorial board. On behalf of our entire MSPress team, I thank you for your interest in *FCRC*, and I look forward to learning about your free clinic accomplishments in future *FCRC* issues. Let us continue to work together as we move forward in our exciting and rewarding healthcare careers.

Elizabeth Christine Lee

M.D. Candidate, Georgetown University School of Medicine
Inaugural Associate Editor, The Free Clinic Research Collective
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Benefits of a Student Laboratory Team in the Free Clinic Setting: Enhancing Student Education and Patient Care

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Health Outreach Partnership of the Eastern Virginia Medical School Students (HOPES) Clinic, Eastern Virginia Medical School, Norfolk, VA

Abstract

Introduction: Lack of health insurance poses a significant problem in the United States and substantially impacts national health. Student-run free clinics, such as the Health Outreach Partnership of EVMS Students (HOPES) Clinic at Eastern Virginia Medical School (EVMS), serve to decrease the adverse health effects caused by lack of health insurance. Within the EVMS HOPES Clinic, the Laboratory Team offers valuable patient services while providing learning experiences to student volunteers. This investigation serves to assess the value of a Laboratory Team or a similar volunteer team in the student-run free clinic setting.

Methods: A retrospective review of previously collected EVMS HOPES Laboratory Team data logs, staff roster, and standard operating procedures from January 1, 2015 through May 31, 2015 was conducted. HOPES Laboratory service data for all clinics, general health and specialty, were included and analyzed. Seven EVMS students were on the Laboratory Team staff roster during the study period with representatives from both the EVMS M.D. program and the Physician Assistant program.

Results: From January 1, 2015 through May 31, 2015, six types of laboratory services were offered: blood glucose, hemoglobin A1c, urinalysis, urine pregnancy, hemoccult, and electrocardiogram testing. Sixty-five laboratory tests were completed by HOPES Laboratory Team Staff with a mean number of 2.2 tests (range=0-13) completed per three-hour Laboratory Team shift.

Discussion: The EVMS HOPES Clinic Laboratory Team aids patients and educates future medical professionals. The value of the Laboratory Team in both student education and patient care supports the establishment of a similar team in other student-run free clinic settings as well.

Introduction

Approximately one-fifth of the United States non-elderly population, 44 million Americans younger than 65 years of age, lack health insurance, including 33 million adults aged 18 to 64 years.[1] Studies have shown that lack of health insurance is closely associated with significant clinical consequences.[2,3,4] Uninsured adults experience substantially reduced access to preventative services, chronic illness treatment, mental health assessment and acute injury care.[5] Student-run free clinics are one of many healthcare initiatives that seek to assist the vulnerable population of uninsured American adults.

Established in 2011 in Norfolk, Virginia, Eastern Virginia Medical School (EVMS) HOPES Clinic operates twice weekly. The EVMS HOPES

Clinic offers primary care services, designated as General Clinic, as well as women's health, orthopedics, ophthalmology, dermatology, mental health, and ultrasound services, designated as Specialty Clinics. Before the EVMS HOPES Clinic, patients were without consistent healthcare services due to the lack of free health services in the area. The EVMS HOPES Clinic remains the only student-run free clinic in Virginia.

The EVMS HOPES Clinic utilizes a unique team-based leadership structure with different aspects of clinic management and operation handled by various specialized volunteer teams. All EVMS HOPES clinical staff members are students at EVMS working on a volunteer basis. One of the clinic's specialized teams is deemed the Laboratory Team (Lab Team). Not every student-run free clinic utilizes student volunteers as laboratory test providers; however, the EVMS HOPES Clinic has formulated a Lab Team to provide patients with point of care testing, or medical testing completed at or near the site of patient care providing immediate results. This study serves to assess the work of the EVMS HOPES Lab Team over a five month period and the value of a Lab Team or a similar volunteer team in the student-run free clinic setting.

Methods

This retrospective review assessed previously collected EVMS HOPES Lab Team data logs, staff roster, and standard operating procedures for five months from January 1, 2015 through May 31, 2015. HOPES Laboratory service data for all clinics, general health and specialty, were included and analyzed.

One Lab Team member was on staff in the HOPES Clinic each clinic night; this is deemed one shift. At the end of each shift, the Lab Team Member on staff documented the tests performed in a shared document accessed by all Lab Team Members. Documentation included number of each test performed and type of shift completed (Women's Health, General Health, or Specialty). Test counts for the study period were assessed for patterns of use, and the average number of tests performed per Lab Team shift was calculated.

The Lab Team maintained a consistent student roster of seven volunteers with representatives from both the EVMS M.D. program and the Physician Assistant program. The Lab Team is organized around an advisor, lead, and a team member leadership structure. This structure involves one student acting as "Lab Team Advisor," one student designated as "Lab Team Lead," and five students categorized as "Lab Team Members." The Lab Team advisor works with the EVMS HOPES Clinic Board of Directors and EVMS administration and does not staff the clinic. The Lab Team Lead implements changes decided on by the Lab Team Advisor and oversees day-to-day lab operations. The Lab Team Lead staffs the clinic along with Lab Team Members. During the study period, one Lab Team Member or Lead staffed the clinic each night the clinic was open. The EVMS HOPES Clinic was open two times a week during the study period.

All EVMS Lab Team testing supplies are funded by a generous grant donation from the Norfolk Southern Foundation.

The authors had no access to individual patient charts and were not presented with identifiable protected health information. Only test counts were available to the authors, and thus the EVMS Institutional Review Board deemed the project quality assessment exempt from IRB oversight.

Results

Over the study period of January 1, 2015 through May 31, 2015, six laboratory services were offered: blood glucose, hemoglobin A1c (HbA1c), urinalysis, urine pregnancy, hemoccult, and electrocardiogram (ECG) testing. Sixty-five laboratory tests were completed by EVMS HOPES Lab Team Staff with a 2.2 mean number of tests (range=0-13) completed per three-hour shift. Figure 1 shows the number of each test performed during the

study period. The most requested test was the blood glucose measurement with a total of 21 tests completed. The least requested test was the ECG and hemoccult test with four of each completed over the course of the study period.

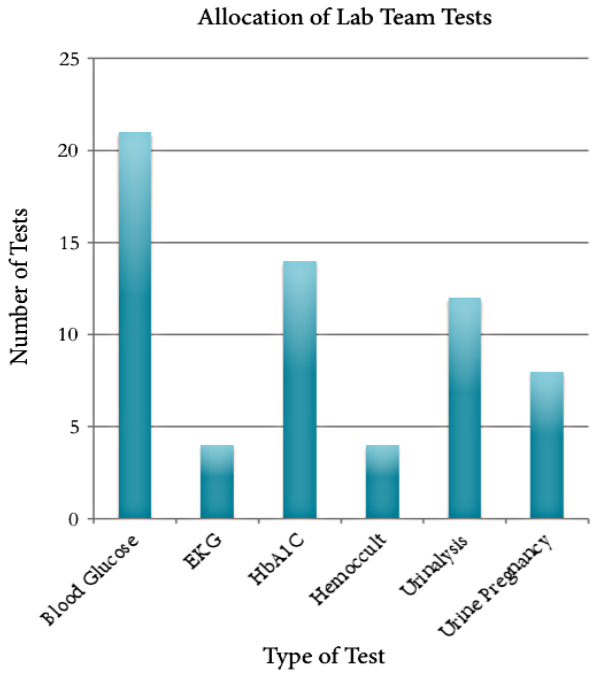

Figure 1. The Variety of Tests Performed by the EVMS HOPES Lab Team Members.

Discussion

The EVMS HOPES Clinic is a unique student-run free clinic in its employment of on-site student-performed laboratory testing. Within a five month period, 65 tests were ordered by the members of EVMS HOPES' Lab Team. Without the student volunteer staffed Lab Team, the clinic would have had to send these laboratory tests to an outside laboratory or have patients seek care in a nearby Emergency Department. By providing laboratory results at point of care, the Lab Team directly supplies HOPES clinical teams with information for diagnosis, thus increasing the amount of care available at each patient visit. Without this point of care testing, patients requiring tests would have to make a secondary appointment after the test had been sent out to an off-site laboratory or completed in the emergency care setting in order to have their test results interpreted. This delay in care increases the likelihood of patients being lost to follow-up and limits the quality of continuous care that the EVMS HOPES Clinic can provide.

Not only does the HOPES Lab Team aid the patients seen in the clinic, but it also benefits the students employed on the Lab Team. With a mean of 2.2 tests per shift, the Lab Team provides active experience on each shift, making it a valuable extracurricular commitment for students. One Lab Team Member independently performs these tests during each shift, thereby promoting active learning and building student confidence and autonomy.

Independently performing point of care testing also allows students to gain experience in tests that are not commonly run at the bedside in larger hospitals. This may be especially significant if a student is interested in a field such as cardiology or emergency medicine, for solo ECG experience is hard to come by during early medical training. Students on the Lab Team actively learn to read and interpret ECG tests by performing the test and discussing the results with the student clinician teams and the attending physician. This experience is invaluable for students heading into the healthcare field and improves student education as well as laying the foundation for future skill development occurring in residency. Furthermore, participation in the Lab Team gives students who are potentially interested in rural medicine, a field without the luxury of laboratory personnel support, the chance to learn testing skills.

Studies have shown that calculating the cost effectiveness for point of care testing is extremely difficult because the rapid test result has a significant and pervasive impact on the overall episode of care in a way that is not easily quantifiable.[6,7,8] Most studies agree that evaluating the cost effectiveness of point of care testing often comes down to a common sense assessment more than a rigorous actuarial analysis.[6,7,8] Teaching students this judgment is the

basis for evidence-based ordering practices in medicine. Having an on-site, student run laboratory gives student clinicians volunteering at the EVMS HOPES Clinic a valuable chance to develop this judgment and skill.

In an era of laboratory service over-ordering and escalating healthcare costs, it is important for students to experience evidence-based test ordering practices first hand.[9] The allocation of tests ordered during the study period shows that more blood glucose tests were performed than HbA1c tests. This observation suggests that students are aware of testing costs, test indications, and clinic resources. By using blood glucose testing when possible instead of the more expensive HbA1c testing, the EVMS Lab Team is utilizing available tests appropriately as well as following nationally recognized testing guidelines for diabetes diagnosis and care.[10]

Studies have estimated that upwards of 25% of each inpatient hospital bill is comprised of laboratory test fees, with few of these tests significantly changing patient care or management.[11,12] Students volunteering as clinicians at the EVMS HOPES Clinic are encouraged to only order tests if the outcomes will change the course of a patient's treatment. By actively ordering tests at point of care, student volunteers see the direct effect of test results on medical management. This hands on experience allows students to understand the basis of evidence-based laboratory test ordering. This valuable learning experience during medical training serves to shape more resource conscious physicians.

Finally, the Lab Team fosters inter-professional learning and promotes understanding between health professions by employing students from both the EVMS Medical Doctor program and the Physician Assistant program. By recruiting volunteers across program lines, the Lab Team allows volunteers to interact with students from outside of their program. This inter-professional focus promotes understanding of the strengths of other healthcare fields, leading to more teamwork-oriented professionals in the future.

In conclusion, the EVMS HOPES Clinic Lab Team provides key services in support of the overall success of the clinic. Team members learn valuable skills while providing needed care. Student-run free clinics, which currently do not offer student volunteer-administered point of care testing, should consider formulating a volunteer team similar to the EVMS HOPES Lab Team.

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Breaking Barriers: Providing Skin Cancer Education to the Homeless and Uninsured

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Abstract

Background: One in five Americans will develop skin cancer with an even higher rate presumed for the homeless and uninsured patient population. Travis Park Dermatology Clinic (TPDC) is a medical student-run free clinic in San Antonio, Texas that serves the homeless and uninsured patient population.

Objective: The purpose of this study was to investigate the level of knowledge regarding basal cell carcinoma (BCC) and skin cancer prevention in the TPDC patient population and to determine if education can improve patient knowledge, with the hope of preventing future cases of skin cancer.

Methods: Patients at TPDC were surveyed to assess demographics, including age, ethnicity, sun protection behaviors, sun exposure, and occupation. They also completed a "pre-education" quiz to assess their baseline knowledge of BCC. Students then educated patients on identifying BCC and preventative measures and also supplied them with appropriate sunscreen. Afterwards, patients completed the "post-education" quiz, identical to the "pre-education" quiz for purposes of assessing the efficacy of this educational project.

Results: Fifty-seven of these patients (80%) had never heard of BCC. The average time spent outdoors was 2.93 hours per day; however the majority of patients (57%) reported not using any sunscreen. The average pre-education quiz score was 60.1%, and the average post-education quiz score was 70.5%, showing an increase of 10.4% ($p<0.05$).

Conclusion: The results indicate that the TPDC patient population's knowledge of BCC and sun protection increased during the course of the project. Data indicate a need for the continuation of education regarding BCC and its prevention in the homeless and uninsured population of San Antonio.

Background

One in five Americans will develop skin cancer.[1] This statistic is presumed to be even higher for homeless and uninsured populations because these individuals are less likely to have a regular source of care and are more likely to delay or forgo preventative care and screening as a result of cost and lack of access.[2,3,4,5] Furthermore, many of these individuals lack education regarding sun protection and skin cancer prevention despite spending long hours in the sun daily.[6] The population served at Travis Park Dermatology Clinic

(TPDC), a student-run free clinic from University of Texas Health Science Center at San Antonio (UTHSCSA), is no different. For the past three years, data gathered from this clinic have shown that 11% of TPDC patients presenting to this clinic are diagnosed with cancerous or precancerous lesions.

Basal Cell Carcinoma (BCC) is the most common type of skin cancer, comprising 80% of skin cancer diagnoses.[7] BCC's are caused by chronic damage induced from ultraviolet (UV) radiation from the sun.[8] Consequently, BCC's are found in sun-exposed areas, including the face, scalp, neck, chest and shoulders, and back of the arms and hands.[8,9] This begins in the basal cells, which are located in the deepest layer of the epidermis. Untreated, BCCs can progress to affect bone and other local tissue.[7] Metastasis is rare, occurring in only about 0.028% to 0.55% of cases.[8]

Limiting sun exposure and using one ounce of sunscreen, which is SPF 30 or above, water resistant, and broad spectrum, offers protection.[10] Sunscreen should be reapplied every two hours or after sweating or swimming.[11] Those with lighter skin are at an increased risk of developing skin cancer.[12]

BCC's can vary in presentation, typically appearing as a slow growing sore that bleeds easily and does not completely heal. They may have raised borders with a rolled appearance. However, BCC's can also have a bumpy appearance or rough scaling surface. BCC's are often suspected by palpation and visual inspection and confirmed with a biopsy. BCC and its complications are preventable with appropriate sun protection and early detection, respectively. Therefore, patient education about BCC and sunscreen use is very important, especially in populations such as those served at TPDC, as they are at an increased risk for developing skin cancer and having delayed medical care.

The purpose of this study was to investigate the level of knowledge regarding basal cell carcinoma and skin cancer prevention in the TPDC patient population and to determine if education can improve patient knowledge. We hypothesized that by educating patients about BCC and sunscreen use, patient knowledge would improve with respect to BCC presentation, importance of treatment, and sun protection for prevention.

Materials and Methods

TPDC is a clinic staffed by medical students, residents, UTHSCSA faculty and community dermatologists with the mission to treat skin disorders in the uninsured and homeless populations of San Antonio. The clinic is located in Travis Park United Methodist Church. For the past two years, "Breaking Barriers" themed projects have focused on treating and educating the patient population of Travis Park regarding the prevention, identification, and treatment of two of the three most common types of skin cancer: melanoma and squamous cell carcinoma. This year, the focus was basal cell carcinoma.

Seventy-one patients were included in this study, which began in October 2014 and was completed in March 2015. TPDC took place twice per month during which patients of all ages were treated for various dermatologic conditions. Patients completed a pre-education quiz that assessed their pre-existing knowledge of basal cell carcinoma (definition, identification and appearance, risk, and complications) and adequate use of sunscreen (amount, protection, and UV coverage). Additionally, they completed a questionnaire that evaluated their practice of sun protection behaviors (sunscreen use, SPF level, hats, clothing) and demographic information (ethnicity, skin type, occupation, daily sun exposure, living situation).

All uninsured and/or homeless patients of any age seen at TPDC were eligible to participate in the study. Patients were not excluded from the educational component based on positive history of skin cancer; however resolved cases were not used to calculate

the prevalence of skin cancers in the TPDC patient population. Patients were not stratified based on BCC diagnosis or stage because all patients had localized disease at stage II or below (less than two centimeters without spread to any nearby organs or lymph nodes).

Medical students took patient histories and performed dermatologic physical exams. Following patient examination and treatment by medical staff, students reviewed patients' answers to the quiz questions and provided a handout to patients explaining BCC and another handout explaining appropriate selection and use of sunscreen.

Patients then completed a post-education quiz. Results of pre- and post-education quizzes and questionnaires were recorded. Patients were given the education handouts to keep and were encouraged to share their knowledge with family and friends. They were provided with a sample of sunscreen that met American Academy of Dermatology Criteria (AADC).[10]

The pre-education and post-education quiz scores were used to assess the educational component of our project. A paired t-test was performed to compare the change in overall pre- and post-education quiz scores. To identify changes in the proportion of correct and incorrect answers for particular items on the pre- and post-education quizzes, McNemar's exact test was used for the first four questions on the quiz, and McNemar's asymptotic test was used for the fifth question. Responses were categorized as "right" or "wrong." Missing answers were excluded from the analysis. All diagnoses for patients were documented and used to assess the prevalence of various dermatologic conditions in the TPDC patient population. Medical students and faculty determined the appropriate category for the diseases encountered at the clinic.

Results

Among the patients who presented to TPDC from October 2012 to March 2015, 11% were diagnosed with pre-cancerous or cancerous lesions. Other common diagnoses at the clinic included: inflammatory diseases (29%), benign growths (23%), and infectious diseases (14%) (Figure 1). Two presentations of BCC are shown in Figure 2.

At baseline, 80% of patients had not heard of BCC, and 57% of patients reported using no sunscreen (Figure 3). However, the average time spent outside was 2.93 hours per day, and over 60% of patients worked jobs that required them to be outside for two or more hours per day. Forty percent of patients reported having light colored skin, predisposing them to increased risk of sun damage.

BCC quiz results (Table 1) showed that before education, 85% of patients (n=51) knew BCC was the most common type of skin cancer, 88.5% (n=54) knew that it was caused by chronic sun exposure, and 15.5% (n=9) were able to correctly identify a BCC based on description. After education, 98.3% (n=59) knew that BCC was the most common skin cancer ($p<0.05$), 95% (n=57) knew that it was caused by chronic sun exposure ($p>0.05$), and 39% (n=23) were able to correctly identify BCC based on description ($p<0.001$). Before education, 86% (n=49) knew that BCC could

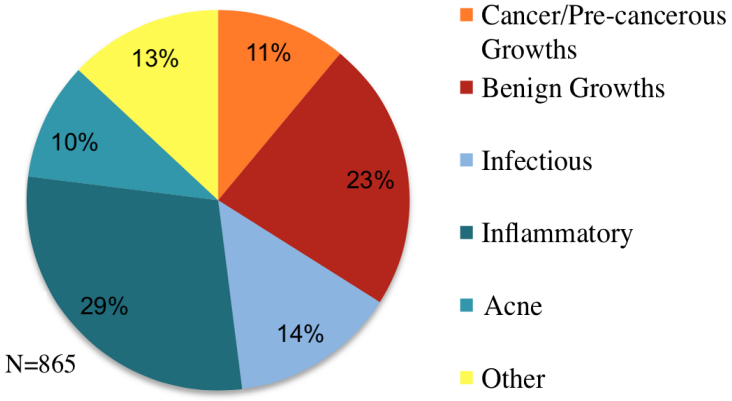

Figure 1. Diagnoses at TPDC (Oct 2012-Mar 2015)

Figure 2. Common Appearances of BCC.
Photos donated by Dr. Mark S. Wallis, M.D. Patients consented to use of these photos in this publication.

spread to nearby bone, and 23.3% (n=14) were able to identify the reccommended criteria for selecting a sunscreen ("using an SPF 30 or above," "using a broad spectrum sunscreen," and "using a water resistant sunscreen"). After education, 88.1% (n=52) knew that BCC could spread to nearby bone, and 59.3% (n=35) were able to identify recommended criteria for how to select a sunscreen ($p<0.001$). This reflects an overall increase of 36% in the number of patients with knowledge of adequate sun protection following education.

The average score of the participants increased 10.4% ($p<0.05$) from 60.1% before education to 70.5% after education. The most commonly missed question (how to identify basal cell carcinoma) improved from only 12.7% of patients answering correctly to 32.4% answering correctly, an increase of 19.7% after education ($p<0.001$).

The incorrect choices can be viewed in Table 1 and are summarized below. Of the incorrect answer choices, 8.3% (n=5) initially thought that BCC was an allergic reaction. No patients thought this after education. Before education, 11.5% (n=7) thought that BCC was caused by something other than sunlight (consumption of artificial sweeteners, being around animals, or staying indoors). After education, 5.1%

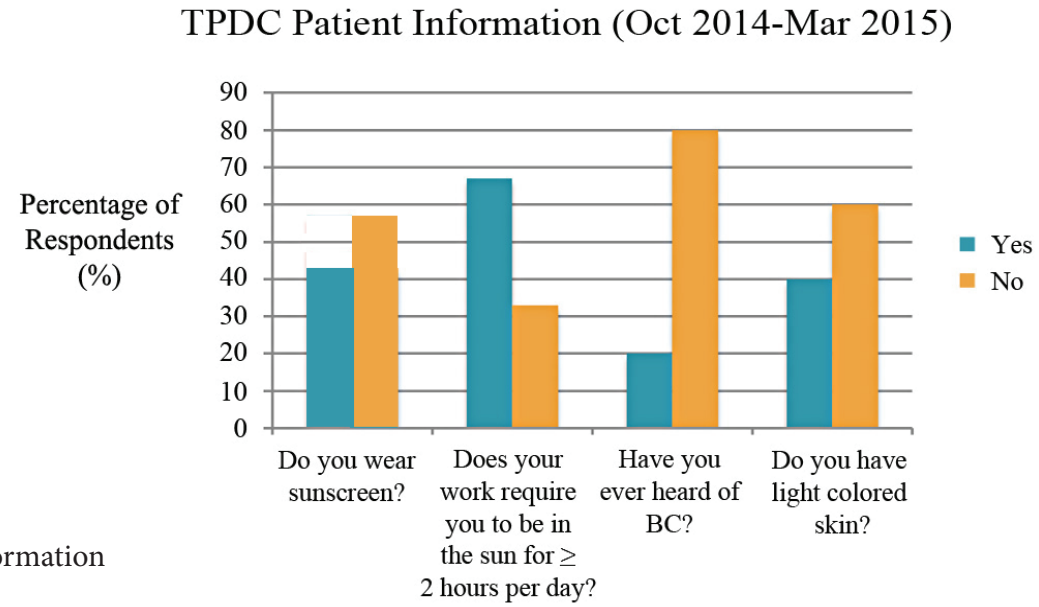

Figure 3. TPDC Patient Information

Table 1. BCC Quiz Results (green indicates correct answer choice)

QUESTION	ANSWER PRE-EDUCATION	ANSWER POST-EDUCATION	P-value
Basal Cell Carcinoma is: a. A virus b. The most common type of skin cancer c. An allergic reaction	(a) 6.7% (b) 85% (c) 8.3% N=60	(a) 1.7% (b) 98.3% (c) 0% N=60	0.016
Basal Cell Carcinoma is caused by: a. Chronic sun exposure b. By consuming artific al sweeteners c. Staying indoors d. Being around animals	(a) 88.5% (b) 4.9% (c) 3.3% (d) 3.3% N=61	(a) 95.0.% (b) 1.7% (c) 1.7% (d) 1.7% N=60	0.453
Basal Cell Carcinoma looks like: a. A pink or brown/black growth that slowly grows, bleeds easily, and may ooze and crust over b. A shiny pink or red scaly patch that may have a flat center and doesn't heal com-pletely c. An itchy collection of bumps along the arms and legs d. A large, uneven, multi-colored mole	(a) and (b) 15.5% (a) 36.2% (b) 19% (c) 3.4% (d) 13.8% Other combinations of the choices: 12.1% N=58	(a) and (b) 39% (a) 16.9% (b) 15.3% (c) 1.7% (d) 3.4% Other combinations of the choices: 23.7% N=59	<0.01
It is important to treat BCC because: a. It is contagious b. It can spread to nearby bone c. You don't have to treat it	(a) 10.5% (b) 86% (c) 3.5% N=57	(a) 8.5% (b) 88.1% (c) 3.4% N=59	0.625
The appropriate use of sunscreen includes: a. Use a sunscreen with SPF 30 or above b. Using a broad spectrum sunscreen c. Using a water resistant sunscreen d. Using a pea-sized amount of sunscreen for the entire body	(a) (b) and (c) 23.3% At least one of the above 71.7% (d) 5% N=60	(a) (b) and (c) 59.3% At least one of the above 39% (d) 1.7% N=59	<0.01
Overall % Correct	60.1%	70.5%	0.013

*Data not available for each question for every participant. Missing answers were not used in this analysis; n=57-61

(n=3) thought that BCC was caused by one of these incorrect choices. Before education, 36.2% (n=21) were able to identify only the first of the two listed descriptions of BCC (answer "A") and 19% (n=11) were able to identify the second of the two listed descriptions (answer "B"), but not both. The other most commonly selected answer prior to education was the description of melanoma (choice "D"). After education, 16.9% (n=10) identified only the first of the two descriptions, and 15.3% (n=9) identified only the second of the two descriptions, but not both, and only 3.4% (n=2) selected the description of melanoma. Before education, 14% (n=8) thought that BCC was either contagious or did not need to be treated. After education, 11.9% (n=7) thought BCC was either contagious or did not need treatment.

Before education, 71.7% (n=43) identified at least one of the three correct AADC criteria (SPF 30 or above, broad spectrum coverage, water resistant), and 5% (n=3) thought that using a pea-sized amount of sunscreen for the entire body alone was correct. After education, 39% (n=23) correctly identified at least one, but not all, of the correct criteria, and 1.7% (n=1) thought that using a pea-sized amount of sunscreen for the entire body alone was correct. The percentage of participants correctly identifying all three criteria increased from 23.3% pre-education to 59.3% post-education ($p<0.001$).

Discussion

The results of this study indicate a statistically significant 10.4% ($p<0.05$) increase in TPDC patient knowledge of BCC based on average scores for the quiz. Regarding sunscreen selection for adequate protection, patient knowledge of criteria increased by 36% ($p<0.001$). This demonstrates that education did increase patient knowledge regarding BCC and sun protection.

The findings of this study emphasize that there remains a lack of education among the population served at TPDC regarding the importance of sun protection to prevent skin cancer, practice of sun protection behaviors, and the most common type of skin cancer. Eighty percent of patients in the TPDC patient population had not heard of BCC, more than half (60%) worked jobs that required them to be in the sun for two or more hours per day (which requires reapplication of sunscreen for adequate protection), 40% reported light colored skin (which predisposes them to increased risk of sun damage and skin cancer), and 57% reported using no sunscreen. Prior to education, only 23.3% of patients knew what criteria to use when selecting a sunscreen for adequate sun protection, and after education, 40.7% of patients still could not correctly identify the AADC criteria ($p<0.001$). These findings demonstrate that despite lifestyles that involve chronic sun exposure (occupation, homelessness), the majority of patients do not practice sun protective behaviors, and there is a large proportion of patients who do not know how to adequately protect themselves.

While 85% were able to correctly identify what BCC was prior to education, 84.5% were unable to identify what it actually looked like, which could contribute to delays in seeking medical care. After education, 39% ($p<0.001$) of patients were able to correctly identify two of the BCC manifestations, and 98.3% ($p<0.05$) were aware that BCC was the most common type of skin cancer. These findings show that our educational intervention was helpful to patients in identifying BCC and understanding that it is indeed cancerous. We also found that after education, 95% of patients correctly answered that BCC was caused by chronic sun exposure, compared to 88.5% of patients prior to education ($p>0.05$); the improvement in patient knowledge regarding the strongest risk factor for BCC (sun exposure) was not statistically significant, indicating that further education regarding BCC risk factor awareness is still needed. Additionally, 57% of patients in this population reported using no sunscreen, and only 39% were able to correctly identify BCC after education ($p<0.001$). These findings demonstrate that there is a continued need to educate the TPDC population regarding skin cancer and prevention.

One limitation of this study was the small number of Spanish speaking volunteers. Prior to the project, a language barrier was hypothesized to be a concern, so educational handouts written in Spanish were created for distribution to Spanish-only speaking patients. However, despite the distribution of these handouts, patient education was still limited as most of the clinic volunteers were English-speaking only, with only minor proficiency in medical Spanish. This communication barrier led to feelings of discomfort during the patient education sessions, and this was a major point addressed by the medical student volunteers. We believe that this communication difficulty played a role in lower post-education quiz scores and incomplete surveys. The requirement to have at least one Spanish-speaking volunteer present at the clinic would help overcome the language barrier. Additionally, lack of literacy could provide a further limitation though it was not present in this study's cohort. In addition to bridging the communication gap between the patients and clinic volunteers, future efforts should be aimed at teaching patients about general skin cancer knowledge, sun protection strategies, and preventive behaviors in order to further increase patient awareness, education, and motivation to protect themselves from skin cancers such as BCC.

Acknowledgements

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A New Approach to Community Outreach in Student-Run Clinics

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Abstract
Fleur de Vie Ruth Fertel (FdV) is a Tulane University School of Medicine student-run clinic that offers free health care to the local community on the second and fourth Saturdays of every month. Over the past year, FdV has encountered low patient volumes because it stopped receiving patient referrals from the weekday clinic with which it shares a space. In order to solve this issue, the FdV clinic formed a partnership with and created three community outreach positions filled by students at the Tulane University School of Public Health. With these new community outreach leaders, the aim is to spread awareness about the FdV clinic and increase patient volume through health screenings, flu shot fairs, and community education classes. Other student-run clinics could also benefit from this type of partnership not only to improve patient flow but also to increase community engagement, utilize resources unfamiliar to medical students, and provide improved quality of care to patients.

Fleur de Vie Ruth Fertel (FdV) is a student-run primary care clinic at Tulane University School of Medicine in New Orleans, Louisiana. The clinic was founded in 2007 to fill the void in the healthcare system left by Hurricane Katrina. We are situated in the Mid-City neighborhood of New Orleans and serve primarily African-American and Hispanic patients. In order to meet the needs of our patient population, we do not require payment or identification, as most of our patients are low-income, uninsured, and often lack documentation. In exchange, like most precepting clinics, first and second year medical students practice taking histories and performing physical exams under the guidance of residents and attending physicians.

Unlike the other Tulane student-run clinics that treat patients in homeless shelters or substance abuse programs, FdV is not affiliated with an in-residence patient population. In the past, FdV received referrals from the weekday primary care clinic with which FdV shares a space and resources. The weekday clinic referred patients lacking identification or insurance, as well as overflow patients. Over the past year, due to the increased number of doctors at the weekday clinic as well as the roll out of the Affordable Care Act, the weekday clinic has been able to accept more patients, thereby resulting in FdV receiving fewer referrals. Because of this, FdV now relies solely on walk-ins from the community.

In years past, FdV clinic leaders supplemented the patient referrals by recruiting patients from the community. They spread word of the clinic by posting flyers at local businesses and attending local health and wellness coalition meetings. Although we continued these strategies with some success, the few people we were able to reach were not sufficient to fill the patient gap created by the loss of referrals. After a number of clinic sessions in which precepting teams did not have the opportunity to see a patient, we felt that our contribution to the local community fell short of its potential; FdV needed to develop new patient outreach strategies to better serve those in need of health care.

To address these patient outreach issues, we decided that we needed to expand our team workforce by reaching out to additional Tulane students. We first tried partnering with Tulane undergraduate students; however this collaborative effort with the undergraduate students did not succeed due to the undergraduate students' limited clinical experience and knowledge. We then tried partnering with a Masters of Public Health (MPH) student at Tulane, who emailed us expressing interest in heading the community outreach efforts for the FdV clinic.

Unlike the undergraduate students whom we initially partnered with, the MPH student had extensive knowledge in community organization and social marketing in the context of healthcare, and we were excited to gain a new leader with knowledge in building community health relations. Together, we created a plan to form relationships with local churches in order to expand our canvassing efforts from businesses to other community organizations. Unfortunately, after a month of planning, the collaboration with this MPH student fell through due to time constraints. This situation occurred once again when we worked with another volunteer MPH student a month later.

We realized that this initial MD-MPH collaboration lacked the structure it needed to be successful. The volunteer position needed to become an official role, as the job of improving community outreach was too time intensive for a single volunteer to tackle alone on an intermittent basis. In addition to creating an official volunteer job title and expectations, we realized that we also needed a method to track progress and establish accountability.

At this time, a group of students at the Tulane University School of Public Health and the Tulane University School of Medicine created an official partnership through the Tulane University School of Medicine Student Clinic Council (SCC). The SCC holds monthly meetings to allow student clinic leaders to discuss clinic strategies, challenges, and improvement opportunities. One such opportunity included the new MD-MPH collaboration, which aimed to utilize the MPH students' knowledge in community programming and data analysis to evaluate clinic services and community needs, while ensuring high quality of patient care.

Thus, this SCC-endorsed partnership created and outlined MPH roles focusing on needs assessment, quality improvement, and patient education for the various clinics. Responsibilities of each role included a monthly report detailing recent accomplishments and unexpected obstacles. These reports were then reviewed by the SCC MPH Coordinator, a newly established position in charge of tracking progress and providing a point of contact for the MPH students. In this way, the partnership outlined specific roles and expectations with an overarching structure that provided accountability and progress tracking. This was applicable not only for individual clinics, but for the partnership as a whole.

It was through this SCC-endorsed MD-MPH partnership that we found the solution to our struggle to create a well-structured community outreach team. The SCC accommodated FdV's request to establish three MPH community outreach positions responsible for increasing patient volume through community engagement.

When reviewing applications for the three positions, we specifically selected students who spoke Spanish. This was a necessary requirement as none of the current FdV clinic leaders could speak Spanish fluently. Without any clinic leaders who were fluent in Spanish, a significant language barrier between the clinic and the local community took way. In particular, this was challenging for the realm of community outreach, as translators were only available during clinic hours. Thus, it became a top priority to select community outreach leaders who

were able to effectively form relationships with the Hispanic community.

As it stands now, we have selected and met with our new community outreach team members. The team has proposed several strategies, including health screenings outside local businesses and free flu shot fairs during clinic sessions. The community outreach and patient education teams also proposed an intra-clinic partnership to run community-attended health classes during clinic hours, in order to educate local residents while giving them the opportunity to familiarize themselves with the clinic space.

In addition to forming community relationships, the MPH students' coursework in public health has prepared them to evaluate health interventions and improve healthcare delivery. The outreach leaders have already administered patient intake surveys to assess the success of each community outreach endeavor, while also evaluating the specific needs of our patients. These survey results would allow FdV to focus on the outreach strategies that are most successful, thereby ensuring that FdV is providing services that match the community's needs.

The new strategies implemented by the MD-MPH leadership team at FdV will allow the clinic to better engage with the community and improve the quality of health care that patients receive. The benefits of such a collaborative team are not limited to FdV or to the Tulane School of Medicine and Tulane School of Public Health. FdV's collaboration has opened our eyes to the value of an interdisciplinary partnership in which students from different disciplines thrive on each other's knowledge base and strengths. We believe that other student-run clinics could also benefit from such an interdisciplinary partnership. Such teamwork could not only help to improve patient volume but also to better engage clinics with the community and provide higher quality of care to patients.

Assessing the Effectiveness of Partners in Quitting, A Text Message-Based Smoking Cessation Program

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Abstract
This article will discuss the implementation of Partners in Quitting, a new text message-based smoking cessation program. It will also provide preliminary data on client engagement rates, program effectiveness, and program challenges. Partners in Quitting is an outreach program under The GW Healing Clinic (run by The George Washington University School of Medicine). The GW Healing Clinic is a program that provides free health and social services to patients in the Washington, D.C. area. It specifically works with the D.C.-based organization, Bread for the City. Partners in Quitting provides an evidence-based, easily accessible, and comprehensive smoking cessation program to the clients of Bread for the City.

It has been shown that using text messaging as a tool to promote smoking cessation and health behavior change has been successful and well received among many populations. In one recent study in New Zealand, participants with an interactive personalized text message cessation program for one month had an average abstinence rate of 28% compared to 13% among those who did not receive the text message program.[1] Another recent study analyzed the text message smoking cessation program, Text2Quit, and found abstinence rates of 11.1% among participants of the program versus 5.0% among the control group who did not receive the text messages and were instead referred to the national Quitline.[2]

Partners in Quitting is an outreach program under The GW Healing Clinic, a student-run free clinic of The George Washington University (GWU) School of Medicine. The GW Healing Clinic provides free health and social services to clients in the Washington, D.C. area and specifically works with the D.C.-based organization Bread for the City.
The main goal of Partners in Quitting is to provide clients of Bread for the City with an evidence-based, comprehensive smoking cessation program that eliminates common barriers to smoking cessation counseling, such as cost, time, and transportation. Participants are recruited within Bread for the City using a variety of methods including flyers, blog posts, and physician or social worker referrals. Interested clients are sent to the Bread for the City Resource Help Desk, where they meet with the resource coordinator to hear about the program, consent to the study portion of the program, and enroll. Clients have the option to participate in the program and opt out of the research component.

Prior to enrollment, the resource coordinator conducts a motivational interviewing session with each client and asks questions to determine which "Stage of Change" the client is currently in. Prochaska's Stages of Change Model (also called the Transtheoretical Model) has been widely used for years to assess an individual's readiness to undergo a health behavior change, particularly in the field of smoking cessation.[3] The Stages of Change are as follows: pre-contemplation,

contemplation, preparation, action, maintenance, and relapse (which is not itself a stage but instead a transition point back to an earlier stage). The stages do not necessarily occur in order or exclusively from one another. Based on current data comparing smoking cessation success to Stages of Change, we encourage clients to at least be in the contemplative stage before beginning Partners in Quitting.

If the client has consented to be involved in the research study, they will also fill out a pre-intervention survey that collects data on demographics and baseline smoking behaviors. Participants are included on a rolling basis, which gives them the freedom to choose a quit date that works best for their schedule. For example, once they undergo the initial intake and enrollment process, some clients choose to begin the program right away, while others may wait several weeks to give themselves time to prepare.

The text message content was created by a GWU medical student using evidence-based resources, including: the NIH's smoking cessation database Smokefree.gov, the program Text2Quit (designed by Dr. Lorien Abroms, a professor in the GWU School of Public Health and Health Services), and a Northwestern University-based cessation program called Chicago Quits. The text messages are sent and received through an online platform created by CareMessage, a company that connects health institutions with innovative mobile- and web-based health communication programs.

Participants receive daily text messages, first preparing them for their quit date and then helping them to maintain abstinence. The text messages are sent for a total of six weeks. The messages provide participants with tools to recognize triggers, fight cravings, substitute smoking for healthier activities, and improve self-efficacy. Some of the messages are interactive and prompt the participant to respond to a multiple-choice or true/false question. This interactive component was created to maintain engagement as well as to assess for progress in acquiring cessation competency. Based on the participant's answer, the program will generate a response back to acknowledge that the client's answer was correct or provide the correct answer. Participants can also "Text Me" to ask questions or receive personalized, one-on-one counseling. The number of text messages sent to clients per day depends on their stage in the program. For example, during the time when they are near their quit dates, they will receive up to seven messages per day, but most days average three to five messages. Clients are also given quit supplies that have been shown to help fight cravings.

Currently, the data regarding the superiority of in-person versus mobile and web-based smoking cessation interventions are inconclusive. However, it is evident that the interventions with the most success are using a comprehensive, multi-faceted approach.[4] Therefore, we decided to offer participants the option to attend voluntary face-to-face group counseling sessions every other week run by Bread for the City's social worker. We will be analyzing data from individuals who only participated in the text message component versus individuals who participated in both the text message and in-person counseling components to see if there are statistically significant differences in outcomes.

To date, twenty-nine clients have completed the program and five clients have withdrawn from the program. The most common reasons for clients withdrawing from the program were: not feeling ready to quit, too busy to engage in the program, or disliking the frequency of the text messages. The program has a 100% user activation rate, meaning all clients, even those who ended up opting out, have replied to at least one text message. In addition, Partners in Quitting has an 80% engagement rate (the sum of the number of messages requiring a response which have been responded to and number of messages not requiring a response in comparison to the total messages sent) and an 83% correct response rate (percent of questions the participant got correct).

Currently, our most challenging task is post-program follow-up to assess for program effectiveness. Only seven out of the twenty-nine clients took the post-intervention survey, so we are currently unable to make any accurate conclusions regarding the effectiveness of the program in helping clients decrease cigarette intake or maintain abstinence. So far, based on attempts to contact previous clients, two clients have confirmed that they have not smoked a cigarette since they participated in Partners in Quitting and have attributed their abstinence directly to the program. Other clients reported smoking fewer cigarettes than they had before the program began and that they are now more aware of their smoking behaviors. One former client said: "They [the texts] always seem to come at the right time. I found them very helpful and saved the good ones so I could read them again later." Another client discussed the bi-weekly in-person meetings that were held at Bread for the City: "I was already pro/con on whether I should or shouldn't…the moment I came in, very positive, well maybe this is that sign I was looking for."

Quitting smoking is not an easy task. We are hopeful that Partners in Quitting will continue to aid clients during this crucial time by providing continuous support, information and resources, and direct outlets to counseling opportunities.

Our main goals for the upcoming year are to increase enrollment via a formal referral system with the assistance of the health care personnel at Bread for the City. We will also be focusing on strategies to increase participation and follow-up. For example, while the pre-intervention survey will still be done in paper form during the initial intake session, the post-intervention survey questions have now been converted to text message format and will be sent immediately following the last program text message. We will also be conducting a quality improvement focus group to assess client satisfaction regarding the quantity, frequency, and quality of the text messages sent.

As CareMessage, Bread for the City, and the GW Healing Clinic continue to support our endeavors, we are able to focus on strategies to reach the goals listed above and continue to optimize the quality and sustainability of the program.

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Incorporation of Pap Smears and a Sexually Transmitted Infection Screening Program in a Student-Run Free Clinic

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Abstract

Grace House is a non-profit long-term residential substance abuse treatment facility in New Orleans, Louisiana. The students of the Tulane University School of Medicine host a free clinic at Grace House offering physical exams and women's healthcare to residents. The Pap test and sexually transmitted infection (STI) screening is offered to all women who enter Grace House as part of their intake physical exam after a patient education session covering an overview of the well woman visit. Specimen collection, delivery to laboratory, interpretation of results, and delivery of results to the patient are coordinated through one of the student leaders, in association with the clinic's faculty advisor, Grace House Staff, and laboratory. Key aspects of the pap smear and STI program include: a contact person coordinating every step, an online HIPAA secure spreadsheet tracking results, patient education, student professionalism, and a direct referral system for abnormal Pap smear results. This program requires a significant commitment of time and effort, but it provides women with important preventative gynecologic care.

Grace House is an independent non-profit long-term residential substance abuse treatment facility for women located in New Orleans, Louisiana. The residents either voluntarily decide or are court mandated to receive substance abuse treatment. Grace House offers addiction treatment regardless of the patient's ability to pay. The clinic is funded through various grants, primarily from local community organizations. A study of women at Grace House demonstrated a vulnerable patient population with an increased risk of cervical cancer, as evidenced by a rate of abnormal Pap smears almost twice that of the general population (39% vs. 20%).[1]

In Louisiana, clients at residential facilities like Grace House are legally required to receive intake physicals to ensure that they are physically able to complete rehabilitation and safely reside in a community residence. The Grace House Clinic, a Tulane School of Medicine student-run free clinic, matches this need with the desire of Tulane medical students to give back to the New Orleans community while developing their clinical skills and awareness of underserved patient populations.

The Grace House Clinic also functions as a women's health clinic, providing patient education, gonorrhea and chlamydia testing, and pap smears, with direct referrals to the local colposcopy clinic as needed. In addition, the clinic also offers yearly flu shots, pregnancy testing and urinalysis, and referrals to obstetrics-gynecology (OB/GYN) and psychiatry services. The students receive empathy training and develop clinical skills appropriate to their level of study. Grace House Clinic meets weekly and is run by four student leaders, each with different responsibilities. Rotating clinic coordinators supervise the clinic. One of the clinic coordinators is tasked with overseeing the Pap smear protocol. A Tulane gynecologist-oncologist oversees clinical operations and acts as a faculty

advisor to the students. Tulane physicians and students volunteer their time and staff the clinic.

Providing Pap smears to this patient population requires a rigorous protocol. At Grace House, the protocol begins with patient education on women's health topics and Pap smears at the start of the clinic visit. The patient meets with a volunteer student who works as a patient educator to discuss Pap smears and human papillomavirus (HPV). Patient educators communicate the purpose of the Pap test and the meaning of the results, emphasizing that a positive result is not definitive for cancer. If the patient opts to receive a Pap smear, the physician or the upper level medical student, working under the supervision of the physician, completes the exam in a private patient room along with the intake physical. Gonorrhea and chlamydia tests can be done at the same time.

At the time of the exam, the pertinent patient information is collected and a medical records release authorization is obtained. The release includes a back-up address in case the patient leaves Grace House treatment before the results are processed. From this point, the specimens are labeled, stored properly (either refrigerated or at room temperature as per the lab), and picked up by a medical courier. The courier delivers the specimens to a lab affiliated with the faculty advisor's clinical office. After the lab processes the specimens, they are uploaded into the clinic or hospital system. The clinic coordinator on duty delivers the patient forms to the faculty advisor's clinical office. The nurse can then access the lab results and ensure that the faculty advisor reviews all results and makes recommendations for treatment in a timely manner.

When the results are interpreted and ready to be delivered to the patients, the coordinator on duty picks up the results, brings them to the clinic, and directs how the patient will be notified. If the patients have 100% negative results, a personalized form letter is sent to the patient. If there is a positive result (either positive gonorrhea test, positive chlamydia test, or abnormal Pap smear result), the patient will be scheduled for a follow-up visit at the next clinic. The attending physician for that night's clinic will read the results, counsel the patient, and write all necessary prescriptions. If there is an abnormal Pap smear result that suggests the need for a colposcopy, then the clinic coordinator emails the physician contact at the local colposcopy clinic to set a follow-up appointment that night. The coordinators ensure that the follow-up appointment is made and that the information has been given to the patient. Throughout the process, the coordinators log their actions in a spreadsheet stored in a HIPAA-secure online location, ensuring that the single clinic coordinator who is in charge of the overall Pap test and sexually transmitted infection (STI) testing, can monitor the entire protocol.

The Grace House Clinic has seen over 500 women since 2012. A total of 120 Pap smears have been performed. Of these, 43 have resulted in counseling, prescription, or referral.

There are five critical points to setting up a Pap smear protocol at a student-run free clinic. First, it is imperative that there be one contact person at each step in the protocol. One faculty advisor should receive and interpret all the results. One clinic coordinator should supervise the entire protocol, ultimately being responsible for the delivery of the test results to each patient. At Grace House Clinic, this coordinator must be in contact with the faculty advisor, the clinic nurse, the laboratory, the courier, and the Grace House staff to ensure that all steps of the protocol are completed. The coordinator needs to be able to follow-up immediately when problems arise. This allows specimens to be collected correctly, prevents specimens or results from getting lost, and ensures that results are received in a timely fashion.

Second, there should be a HIPAA-secure online tracking system to which the faculty advisor and student coordinators have access. The spreadsheet allows all coordinators to participate in the handling of results, while making it possible for the Pap smear

coordinator to oversee the process and track all Pap smears from start to finish. This system can minimize confusion in tracking of patients who have received Pap smears and support timely communication of test results.

Third, patient education and professionalism are important parts of the process. Pap smears are delicate and difficult for some patients to endure. When the patients are informed about what a Pap smear is and how it is done, they feel more confident in undergoing the procedure and in handling their results. Students and coordinators who have been sensitized to a patient's potential trepidation about Pap smears make patient comfort a priority.

Fourth, a direct referral system should be in place so that the patient can go for a follow-up for an abnormal Pap smear. When patients are referred directly to a colposcopy clinic in the area, medical records can be transferred with ease and the patient will not have to undergo a Pap smear again.

Fifth, short-term and long-term continuity on the part of the coordinators is necessary. At Grace House, the coordinators debrief weekly over email so that the Pap smear coordinator will be aware of any issues involving the protocol. A Pap smear continuity manual exists to facilitate the smooth turnover of the position at the end of the year. Because the Pap protocol involves many outside agencies who may be experiencing their own staff turnover, the Pap smear coordinator position is the critical source of continuity and knowledge for the protocol.

Pap tests and STI screens are critical preventative measures that are often inaccessible to many women. Adding these procedures to a free clinic represents a major investment of resources and requires ongoing funding for supplies and laboratory work, as well as a personal commitment to clinic operations. We suggest that anyone who wants to start a Pap or STI program at a student-run clinic consider the following five best practices: 1) one student coordinator responsible for overseeing the protocol, 2) a HIPAA secure data cloud to track each test, 3) enhanced patient education and student professionalism training, 4) direct referrals for patients with positive results, and 5) special attention to ensuring continuity as student leaders cycle through coordinator roles. Grace House Clinic's Pap smears and STI program has already helped many women receive treatment for precancerous conditions, including one woman who received treatment for stage three cervical dysplasia based on test results from this program. Thus, the incorporation of preventative women's healthcare programs, such as Pap smears and STI screening, in the free clinic setting may help prevent or delay significant morbidity and mortality.

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Increasing Access to Specialized Dermatologic Care Through a Volunteer-Driven Free Clinic

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Abstract
Approximately 40% of individuals in the United States live in areas underserved by dermatologists. The lack of specialized skin care is particularly pronounced among patients without insurance coverage, as almost half of all dermatologists do not see uninsured patients. We report our experience with the Venice Family Dermatology Clinic, a volunteer-driven dermatology clinic in Los Angeles, California. Several unique features of the clinic include: operating within a larger primary care free clinic that provides referrals and clinic space, having access to an in-house pharmacy, and collaborating with an academic center that provides pathological examination of tissue samples. We hope that the noteworthy features of this clinic may serve as a guide to improve the quality of care and teaching offered at other free dermatology clinics.

The United States is currently experiencing a dermatology workforce shortage, with over 40% of citizens living in areas underserved by dermatologists.[1-3] This has translated to long wait times to see a dermatologist, even among patients with urgent conditions such as changing pigmented lesions.[4] The lack of specialized skin care is particularly pronounced among patients without insurance coverage, as almost half of all dermatologists do not see uninsured patients.[5] With few other options, many patients present to the emergency department with cutaneous complaints. Dermatologic issues accounted for 4.2% of total emergency department visits in 2010.[6] Patients without insurance are also more likely to miss routine checkups, including skin cancer screenings.[7] Accordingly, skin cancer morbidity and mortality are disproportionally higher among the uninsured, who present with relatively more advanced disease than their insured counterparts.[8-10]

Since its inception, the Affordable Care Act has made great strides in reducing the number of uninsured Americans.[11] However, millions of Americans who remain uninsured or underinsured continue to rely on volunteer-driven free clinics as safety nets for their medical needs.[12] For such patients who present with cutaneous diseases beyond the scope of clinical knowledge of primary care physicians, referral to dermatology specialists may be necessary.

To address the need for increased access to specialized dermatologic care among the underserved population in Los Angeles, California, the Venice Family Dermatology Clinic, a volunteer-driven dermatology free clinic, was started in 1999. The dermatology clinic is integrated into the non-profit Venice Family Clinic, which offers an existing infrastructure for providing free medical care to the uninsured population of greater Los Angeles County. The Venice Family Clinic provides the Dermatology

Clinic with patient referrals from the associated primary care clinic, office space where patients are seen, and basic supplies such as liquid nitrogen. The Venice Family Dermatology Clinic possesses several noteworthy qualities that allow delivery of superior patient care.

The Venice Family Dermatology Clinic provides an in-house pharmacy that offers common dermatologic medications, including topical corticosteroids, antibiotics, and antifungals. This was made possible by the Dermatology Clinic's partnership with the Venice Family Clinic, which funds the pharmacy and provides the Dermatology Clinic with full access to all medications and supplies. Prescriptions are provided for patients who require more advanced therapies, provided they have the financial means to procure the medication from an external pharmacy. Because patients at free clinics typically lack insurance coverage for prescription medications, it is likely that the provision of basic, highly used dermatologic therapies by free clinics may improve patient compliance with therapies that patients might not otherwise be able to afford.

At each clinic session, we encounter one or two cases that are clinically equivocal and require histopathological examination for confirmation of diagnosis. The Venice Family Clinic has met this need by initiating collaboration with the University of California, Los Angeles (UCLA) Department of Pathology, which provides the resources necessary for creating and evaluating pathology slides. For dermatology free clinics in close proximity to academic centers, it is highly advisable to seek such assistance with pathologic examination of tissue samples, as this greatly increases the breadth of clinical practice possible in the free clinic setting.

Dermatology faculty from UCLA and the University of Southern California (USC), as well as several private practitioners, alternate as supervisors at the Venice Family Dermatology Clinic. In addition, senior dermatology residents are encouraged by faculty to attend the clinic, where the residents are given increased autonomy over diagnostic and therapeutic decisions. The incorporation of senior residents into the free clinic serves several important purposes. Most importantly, a larger number of independent practitioners translates to longer, more dedicated visits with patients, especially for those who present to the clinic with multiple, often long-neglected medical problems. The increased responsibilities entrusted to senior residents also serve to decrease the patient burden on the attending physician. In addition, senior residents are able to serve in a teaching role for volunteer medical students.

Beyond providing an affordable source of dermatologic care for patients, the Venice Family Dermatology Clinic offers educational benefits for participating volunteers. Between five and fifteen patients are seen at each session. To accommodate these patients, one senior attending physician, two dermatology residents, and three medical students attend each clinic. All patients are notified prior to the visit that they will speak with a student prior to meeting the attending dermatologist. This practice provides realistic time expectations for patients. Furthermore, all visit notes are first drafted by students and subsequently reviewed and signed off by faculty. This practice not only provides students with opportunities to hone essential documentation skills, but it also increases the efficiency of the free clinic sessions. The attending physician may also utilize unoccupied intervals to teach students about common dermatological disorders.

In our experience, volunteer-driven free dermatology clinics are an effective means of providing specialized skin care to the underserved population. The Venice Family Dermatology Clinic features several unique characteristics that have served to improve the quality of care provided to patients. These include operating within a larger primary care free

clinic that provides referrals and clinic space, having access to an in-house pharmacy, and collaborating with an academic center that provides pathological examination of tissue samples. Additionally, the clinic offers opportunities for medical students to gain essential clinical experiences in dermatology. We hope that the Venice Family Dermatology Clinic may serve as a guide to improve the quality of care and teaching offered at other dermatology free clinics.

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Medication Therapy Management Program Pilot

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Abstract
MEDiC is an organization composed of interdisciplinary student-run free clinics at the University of Wisconsin School of Medicine and Public Health. At one of our seven clinic locations, we have recently implemented a Medication Therapy Management (MTM) program. By introducing a pharmacist as a member of our care team, patients now have the opportunity to receive a wide range of clinical services that focus on medications and medication-related problems. Thus far, we have received positive feedback from the patients seen in MTM clinic, and we have begun screening patients who are candidates for MTM services. We are continually developing new ideas and making improvements to the program in order to best serve our patients while fostering MEDiC's mission of interdisciplinary teamwork and teaching.

MEDiC is an interdisciplinary student organization at the University of Wisconsin School of Medicine and Public Health consisting of medical, pharmacy, nursing, physician assistant, and physical therapy students. These students volunteer at seven different student-run free clinics throughout Madison, Wisconsin. MEDiC's goals are to connect the underserved populations of Madison with healthcare and to promote a culture of interdisciplinary learning among health professional students.

In a typical clinic encounter, interdisciplinary pairs of students see a patient together to elicit the patient's chief concern, obtain a health history, and perform a physical exam. The students present the case to a physician volunteer, who provides guidance to the students and then evaluates the patient together with the students to develop a plan of care. The physician and student volunteers can prescribe and dispense medications, offer lifestyle counseling, and connect patients with community resources and other healthcare referrals.

In the spring of 2015, MEDiC piloted a Medication Therapy Management (MTM) program at the Salvation Army location that allows pharmacists to volunteer in the clinic. Patients are eligible for an MTM appointment if they take three or more medications for chronic medical conditions, use medical devices such as inhalers or glucometers, would benefit from lifestyle modifications, suffer from poor medication adherence, are experiencing adverse effects from their medications, or have low health literacy.

In an MTM appointment, the patient sits down with a pharmacist, a pharmacy student volunteer, and a non-pharmacy student volunteer to ensure all of the patient's medications are safe and effective. Initially, the two students see the patient as a team and take a thorough medication history, in addition to gathering pertinent lifestyle information that might be affecting the patient's health. After the initial interview, the students present the case to the pharmacist and together come up with a plan regarding any necessary interventions, recommendations to the patient's other providers, or

patient education regarding medication use and lifestyle habits. Each patient leaves with a wallet card listing his or her medications that he or she can bring to future appointments and update as needed. In addition to coordinating the MTM visit, the pharmacist is also available in the staffing room to assist physicians with drug therapy recommendations for patients being seen in the general clinic and to aid student volunteers in identifying pertinent side effects and administration information for medications that are prescribed in the clinic.

If successful, this program will provide patients with a forum to address any medication-related concerns and will allow patients to gain a better understanding of their disease states and the medications being used to treat these diseases. It will also help to foster MEDiC's mission of interdisciplinary teamwork and teaching with the utilization of a pharmacist in the clinic. After observing the pharmacists' strategies to improve medication adherence and patient education along with the questions posed by pharmacists to elicit information regarding a patient's medication regimen, students from other health disciplines will be better prepared to employ these methods in their own practices.

Since recently introducing the MTM services, we have begun to identify patients who would most benefit from an appointment. One example was a woman with chronic obstructive pulmonary disease (COPD) who was a smoker and had been seen in the general clinic. She had questions about how to use her inhalers, so she was seen for an MTM visit following her initial appointment. She had three different inhalers that she had never been taught how to use. Therefore, she had received very little benefit from her prescriptions. During her visit in the MTM clinic, she was shown how to use her inhalers and was able to teach back the appropriate method. The pharmacist and students also addressed her tobacco use. They discussed the benefits of quitting smoking, and after the patient stated she was ready to quit, they helped her to set a quit date and addressed barriers that might arise after quitting. She also already had an appointment scheduled with her primary care provider the following week, so they recommended that she ask about receiving the pneumococcal vaccine due to her COPD diagnosis. She was very appreciative and felt strongly that MTM clinic should be offered every week.

While we have seen a number of positive encounters within our initial MTM clinics, we have experienced difficulties with patient recruitment. As the Salvation Army clinic has lately seen a low patient census, MTM has now been moved to the Southside clinic, which sees a larger volume of patients. The MTM clinic is being held once monthly to allow for patient recruitment in the weeks of general clinic leading up to the MTM date. Our intake staff and clinic coordinators in the general clinic have begun to screen for patients each week who would benefit from MTM and are providing them with a referral to return for the next MTM date. We anticipate continuing to see patients for MTM who have just been seen in the general clinic and are then referred, in addition to those who have been previously referred and report to clinic specifically for an MTM appointment.

In light of the initial positive impact the service has had for patients at Salvation Army, we hope to make MTM a permanent addition to the Southside clinic. If our new screening methods prove to be effective, our goals will be to meet twice monthly at Southside and to potentially expand the program to other clinics. As we continue to integrate new ideas into the program, there are likely to be further changes to the clinic workflow. However, our initial results are promising, and we anticipate that we will continue to reach more patients as we discover the most effective methods of advertising the MTM clinic.

Pairing Medical Student Education and Pap Smears at the Eastern Virginia Medical School HOPES Free Clinic

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Abstract

Invasive cervical cancer represents nearly 10% of all cancers in women. Papanicolaou testing (Pap smear) programs in many low income groups have performed poorly in reducing the burden of cervical cancer due to lack of access to healthcare. Student-run free clinics have the unique ability to shape future physicians while providing important services to those in need. The Eastern Virginia Medical School Health Outreach Partnership of EVMS Students Free Clinic (EVMS H.O.P.E.S. Clinic) capitalizes on this pairing by providing Pap smears to uninsured women in the Hampton Roads, Virginia area while teaching students valuable clinical skills. From July 1, 2014 through December 31, 2014, 152 patients were seen at the EVMS H.O.P.E.S. Women's Health Clinic, and 33 Pap smears were performed. A mean of 58 student volunteers per month attended the EVMS H.O.P.E.S. Women's Health Clinic over the date range evaluated (range 31-74 volunteers/month) with volunteers representing the medical degree program as well as the master of physician assistant program. By providing Pap smears to underserved women in Hampton Roads, the H.O.P.E.S. clinic is lessening the health care access disparity between low and high-income women while successfully pairing student education and patient care. This structure can be a model for any student-run free clinic looking to expand their student opportunities and patient services.

Invasive cervical cancer is a staggering burden on world health representing nearly 10% of all cancers in women with an estimated 371,000 new cases diagnosed world-wide each year.[1] Not surprisingly, studies indicate that the risk of invasive cervical cancer is 2-10 times greater among women who have not been screened or have been screened infrequently.[1,2]

Cervical cancer is the most widely screened cancer in the world across all income levels. Cervical cytology screening programs offering Papanicolaou testing (Pap smears) every three to four years have reduced cervical cancer incidence and mortality by up to 80% in the past five decades.[3] Contrary to the success seen in high income groups, Pap smear programs in many low income groups have had less impact on cervical cancer burden.[4] The lack of program benefit is thought to be due to inadequate organization, low follow-up rates, and lack of access, with lack of access being the most significant factor.[5,6]

Many programs and organizations attempt to bridge this access gap and provide underserved and at-risk women with affordable Pap smears. A unique source of aid comes in the form of the student-run free clinics. Pairing medical education with community-based medicine gives student-run free clinics the opportunity to train future physicians

while simultaneously providing important services to patients in need. The Eastern Virginia Medical School H.O.P.E.S. Student-run Free Clinic (EVMS H.O.P.E.S. Clinic) provides Pap smears to uninsured women in the Hampton Roads, Virginia area while teaching students valuable clinical skills.

Between July 1, 2014 through December 31, 2014, 152 patients were seen at the EVMS H.O.P.E.S. Women's Health Clinic, a subsection of the EVMS H.O.P.E.S. Student-Run Free Clinic, following the format outlined in Figure 1, and 33 patients received Pap smears. The clinic reported a monthly mean of 58 student volunteers from both the medical degree program and the master of physician assistant program (range 31-74 volunteers/month).

Students benefit from the format at the EVMS H.O.P.E.S. Clinic because they are able to see patients on their own and gain experience presenting to an attending physician. During the attending physician exam, students have the opportunity to perform supervised pelvic exams and Pap smears.

The large number of patients seen during the six-month period and the high number of Pap smears provided free of charge suggest the impact of the model for the H.O.P.E.S. clinic. Without the clinic, patients may otherwise have been unable to access healthcare resources.

The impact of the clinic reaches beyond patient encounters and providing Pap smears for the Hampton Roads underserved population. A mean of 58 student volunteers per month, including both medical degree students and master of physician assistant students, shows extensive student involvement while providing an opportunity for interdisciplinary education. The clinic allows students to gain experience obtaining a history and physical as well as performing supervised pelvic exams and Pap smears. With a documented shortage of medical residency positions, there is increased pressure for students to supplement their academic resume.[7] The EVMS H.O.P.E.S. Women's Health Clinic fills this role by providing students with hands on experience as well as clinical volunteer hours.

The organization of the student-run free clinic also offers leadership opportunities to medical students. Two students per year act as "women's health coordinators" for the clinic, and they coordinate all of the activities for the clinic that year. This model promotes interdisciplinary learning and affords students a chance to experience the logistics and politics involved in healthcare administration.

Additionally, volunteering at the H.O.P.E.S. clinic prepares students for clinical assignments in the medical curriculum. Real patient encounters at H.O.P.E.S. allow students to feel prepared prior to their time on the wards. This confidence may improve clerkship grades and the overall medical school experience. Increased experience may potentially better prepare students for the United States Medical Licensing Exam Clinical Skills component (Step 2 CS).

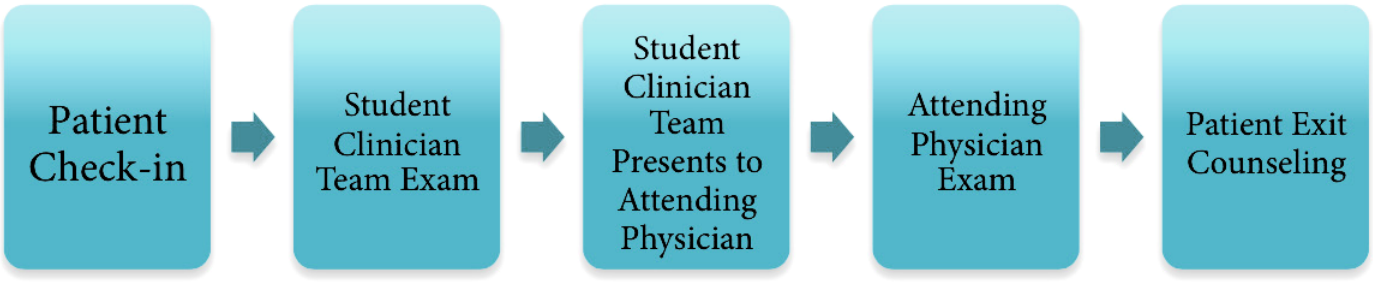

Figure 1. Flowchart representing a typical patient visit to EVMS H.O.P.E.S. Women's Health Clinic.

In conclusion, the EVMS H.O.P.E.S. Women's Health Clinic provides Pap smears to underserved women in Hampton Roads, lessening the healthcare access disparity between low and high-income women. The successful pairing of student education and patient care makes the EVMS H.O.P.E.S. Women's Health Clinic model applicable to other student-run free clinics looking to expand their student opportunities and patient services.

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The Patient-Centered Curriculum

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Examining our crisp white coats during our White Coat Ceremony, we sat at attention, ready to feel in our pockets the weight of our stethoscopes and to recite the oath that would initiate us into the profession of medicine. Then, with the commanding respect that only experience can provide, Dr. Donald Knowlan, a master clinician, spoke two words that echoed throughout the hall. Two repeated words settled over us, eliciting a sobering sense of duty in the class of 2018.

"The patient, the patient, the patient."

As a medical student, my first and most profound exposure to the patient occurred in Georgetown University School of Medicine's student-run free clinic, the HOYA Clinic housed under the roof of the D.C. General Homeless Shelter. Volunteering at the HOYA Clinic has taught me important lessons, such as: maintaining fortitude amidst the difficulties of medical education, serving the underserved, committing to lifelong learning, and embodying the role of patient advocate.

Walking into a HOYA Clinic exam room, my fellow medical students and I face circumstances unlike the ones to which we may grow accustomed in a traditional medical setting. The homeless patients we see at the clinic teach us the mental toughness that will help us persist through difficult times in our medical student careers—work such as sitting down to learn voluminous details of material and pushing ourselves forward even when we make mistakes and face criticism.

In addition to the resilience that student-run free clinics like the HOYA Clinic can teach students, these clinics impart two other important skills on future physicians: leadership and compassion.

In the traditional medical setting, there can be up to a decade between commencing medical school and taking on the role of a trusted physician. However, in the setting of a student-driven clinic, the students become the leaders and teach one another while helping to steer the ship of patient care. Rather than forcing us down in the shadows of the medical hierarchy, this environment teaches us to be leaders to pursue constant improvement as future physicians.

Without compassion and interpersonal connection, leadership means very little for a developing physician. Empathetic relationships help us break down the barriers that may arise due to feelings of fear, suspicion, anxiety, and suffering that the patient may experience. Textbooks teach us to ask patients questions

such as: "How does that make you feel?" and "Is there anything else you would like to discuss?" However, no book can convey the genuine emotions that surface when we receive tears, anger, or despair as a response from our patients. Only the combination of medical knowledge and genuine care can settle these difficult emotions. In addition to cultivating physical health, we must also navigate the emotional and psychological landscapes of the patient, thereby helping the patient achieve optimal, all-encompassing health, rather than simply mitigating disease. We may never be able to make our patients feel better until we can make our patients feel cared for.

With student-run free clinics, we see firsthand what it feels like to balance the roles we know we must take on as future physicians: healer, listener, confidant, and coach. No class, book, or discussion can teach this. We can only learn these lessons behind the closed doors of the exam room—from the patient, who teaches us, and from our superior clinician-educators, who supplement our learning with their expertise.

The day we embarked on our professional path, Dr. Knowlan explained to us the need to "become fully attentive to our patients…less technician and more clinician!" I remember asking myself how we can best learn that skill. Through my experiences at the HOYA Clinic, I realized that the path to mastery involves mindful practice and consistent exposure to the environment in which we will serve. We must put ourselves in situations that combine patient exposure with an atmosphere that helps us embody the foundational values of medicine: service, advocacy, and lifelong learning.

From helping me develop the mental fortitude to succeed in medicine, to showing me the power of empathetic communication, to engraining in me the core principles of medical care, the HOYA Clinic has taught me lessons that do not exist in medical school textbooks. Hidden behind the walls of student-run free clinics, this patient-centered curriculum keeps students connected to the core component of clinical care—always reminding us of the person for whom we all entered this profession.

The patient. The patient. The patient.