

Collaboration and Research as Key Elements for Strengthening Blood Donation in Developing Nations: The Case of Grenada, West Indies

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ABSTRACT

Objective: The purpose of the study was to identify ways to strengthen the collaboration between the Grenadian Blood Bank, the St George's University (SGU) chapter of the American Medical Students Association, and St George's University Health Clinic in order to improve the promotion of blood drives and increase the number of volunteer donors.

Methods: The study had two phases. Phase 1: an assessment of the strengths and needs of the collaborators and of the blood drives. Phase 2 consisted of three student assessments: a cross-sectional survey of second year medical students, a cross-sectional survey of students in the School of Arts and Sciences and a case-control study of factors affecting student donation on the day of blood drives. Embedded within both phases were service-learning opportunities for students. Both phases received approval from SGU's Institutional Review Board.

Results: Preliminary achievements included a transient increase in blood donation of twenty per cent during five months though advertising of blood drives remains inadequate. Assessments reveal that most students lack knowledge about the drives, and time (medical students) and fear of needles and infection (Arts and Science students) are potential hindrances to blood donation.

Conclusions: The Blood Bank needs to increase its profile on the university campus and develop a more effective promotion of the blood drives addressing the concerns of students. St George's University needs to continue supporting student involvement in health promotion activities and identify ways to ensure the sustainability and continuity of these activities. Collaboration and research are useful and effective means to promote blood donation. College students are potentially an excellent source of collaborators and donors if provided with the promotion skills and participation is made convenient.

Keywords: Blood donors, college students, Grenada, West Indies

La Colaboración y la Investigación como Elementos Importantes para Fortalecer la Donación de Sangre en las Naciones en Vías de Desarrollo: El Caso de Granada, West Indies

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RESUMEN

Objetivo: El propósito del estudio fue identificar maneras de fortalecer la colaboración entre el Banco de la Sangre de Granada, la Universidad de San Jorge (SGU), la Asociación Médica Estudiantil Estadounidense, y la Clínica de la Salud de la Universidad de San Jorge, con el fin de mejorar las campañas de donación de sangre y aumentar el número de donantes voluntarios.

Métodos: El estudio tuvo dos fases. Fase 1: una valoración de las fortalezas y necesidades de los colaboradores y de las campañas de donación de sangre. Fase 2, consistente en tres valoraciones de estudiante: una encuesta transversal de los estudiantes de segundo año de medicina, una encuesta transversal de estudiantes en la Escuela de Artes y Ciencias, y un estudio de caso-control de los factores que afectan la donación del estudiante el día de la campaña de la donación de sangre. Insertadas entre ambas

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fases se encuentran las oportunidades de aprendizaje-servicio para los estudiantes. Ambas fases recibieron la aprobación de la Junta de Revisión Institucional de SGU.

Resultados: *Los logros preliminares incluyeron un aumento transitorio de un veinte por ciento en donaciones de sangre por un período de cinco meses, si bien los anuncios de las campañas de donación de sangre continuaban siendo inadecuados. Las evaluaciones revelan que a la mayoría de los estudiantes les falta conocimientos sobre las campañas de donación, y que el tiempo (estudiantes de medicina) y el miedo a las agujas y las infecciones (estudiantes de Artes y de Ciencia) constituyen obstáculos potenciales a la donación de sangre.*

Conclusiones: *El Banco de Sangre necesita aumentar su perfil en el campus universitario y desarrollar una promoción más eficaz de las campañas de donación de sangre sobre la base de prestar atención a las preocupaciones de los estudiantes. La Universidad de San Jorge necesita continuar apoyando la participación de los estudiantes en las actividades de promoción de la salud, así como identificar maneras de asegurar la sostenibilidad y continuidad de estas actividades. La colaboración e investigación son medios útiles y eficaces de promover la donación de sangre. Los estudiantes de la universidad son potencialmente una fuente excelente de colaboradores y donantes, si se les da la oportunidad de promover sus habilidades y participar de la manera más conveniente.*

Palabras claves: Donantes de sangre, estudiantes universitarios, Granada, West Indies

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INTRODUCTION

In 2004, the World Health Organization issued a report calling for more blood donors and enhanced screening of potential donors in all countries, particularly developing nations (1). Of the estimated 81 million units of blood donated worldwide each year, only 39% are collected in poor nations, leaving them with a significant shortage. Overall, merely 39 countries collect enough blood from unpaid donors within their own country to satisfy national requirements (2, 3).

In Grenada, West Indies, the current intake of the Grenada Blood Bank (GBB) is approximately 9 units/1000 inhabitants/year (1) and falls short of requirements. The country is heavily dependent on family donations for transfusions and it is felt that many persons are fearful of the donation process. There is little promotion or education on blood donation and apart from anecdotal information, little is known about why people do not donate. In 2005, the St George's University (SGU) chapter of the American Medical Students Association (AMSA) began organizing on-campus blood drives in order to contribute to the GBB's stores. Apart from this student-supported blood drive, there are no structured or regular blood drives in Grenada.

Blood needs

In addition to fulfilling needs relating to injuries or surgical interventions, blood donations are needed for individuals suffering from a number of haematological disorders. For example, individuals with sickle cell disease [SCD] (4) and patients with leukaemia increase the demand for blood donation (5). A 2007 cohort study in Jamaica estimated that annually, one in 150 children born in the country will have a form of SCD and one in 300 will have the homozygous form, which requires a number of blood transfusions over the person's lifetime (6).

Though data are limited on Grenada, it is likely that the prevalence of SCD is high because of the predominance of persons of African descent [87% of the population] (7).

College students as blood donors

There is limited published literature on blood donation among college students and the characteristics and motivation of the donors among them. A study conducted in two eastern United States of America (USA) liberal arts colleges described student donors as being mostly younger males of higher socioeconomic and educational status. Their reasons for donating included humanitarian concerns, peer pressure, convenience, and curiosity. Reasons for not donating were: medical conditions, fear of needles, general apprehension and fear of the after effects (8). A survey implemented among mostly female students at two historically black institutions in the USA showed that a convenient donation location was the highest motivator for both established and potential donors (9). Among Brazilian undergraduate medical students, one study found a prevalence of blood donation of 39% with over 70% motivated to help a friend or relative. The study identified that students older than 24 years, whose mothers were donors, were more likely to become voluntary donors (10). Another study conducted amongst health sciences students of the University of Carabobo, Venezuela, found their knowledge about blood donation to be mistakenly based on myths and taboos and identified social passivity amongst their students. The study noted that blood donation was mostly associated with the occurrence of natural disasters and called for the promotion of altruism to recruit more student donors (11). Research conducted at a university in Thailand showed no correlation between demographic characteristics (*ie* age, gender and education) and students' knowledge and motivation to donate blood. The

study identified fear, physical harm and viewing donation as a waste of time as the main deterrents to donation (12). A similar project conducted at a Chilean university also showed little correlation between demographic characteristics and donor motivation, although it reported that males were more likely to donate than females. The main motivation for donors was their desire to help a family member or friend in the event of a catastrophe. Major reasons for non-donation were medical, lack of trust in the process, previous hepatitis and dislike for the hospital environment (13).

Characteristics of blood donors

Studies conducted in the USA and Europe have characterized the standard donor as a college educated married male (14–17). However, these may not be the only predictors of blood donor behaviour (16) given that altruism as a desirable social ideal is heralded and promoted in developed countries such as Australia (18). Others, such as Denmark, frame it as a social obligation (17). A study conducted in Trinidad and Tobago found the great majority of donors to be of African descent [Trinidad and Tobago is 40% South Asian, 37.5% African, and 22.5% mixed ethnic origin] (7) and that donation was positively correlated with university education. Overall, most non-donor women reported fear of contracting a disease; while for university-age women, the fear of needles was the most significant reason for not donating (19). Another study, also done in Trinidad and Tobago, highlighted the lack of public awareness with respect to blood donation requirements as negatively affecting blood bank efforts (20). A study conducted in Sao Paulo, Brazil, showed the majority of donors to be males with at least high school education. Altruism combined with a desire to know one's own health status was the main motivator for donating blood (21).

Collaborations

There is an extensive history of collaboration between academic institutions and community organizations. Mutual benefits are to be gained through this practice (22). In addition, these collaborations help universities create and maintain a positive public image that enhances their resource development, and help them fulfill their moral obligations with the community (23, 24). Routinely, these collaborations combine two different organizational systems, each with its own approach, goals, values, types of funding, demands and limitations (24, 25) and which require a careful and balanced consideration of their guiding principles and goals. A recent report on an alliance between the blood bank and the School of Medical Technology in Talca, Chile, showed that student-organized and -promoted blood drives were effective in building their donor base. The study concluded that the replacement or voluntary model has positive effects, reducing costs associated with blood donation as well as improving the quality of donors (26).

Context/Background

St George's University American Medical Students Association (SGU-AMSA) primarily consists of (> 99%) students residing in North America who go to Grenada to study human medicine. Blood drives have formed a part of their health-promotion activities since 2005. These drives are held monthly, resulting, on average, in 10–25 student donations despite a total population of approximately 3320 students (\approx 2295 medical, 390 veterinary medical and 635 arts and sciences) and 500–600 faculty and staff members.

The GBB is responsible for delivering blood supplies to all Grenadian health facilities, serving a population of approximately 100 000 people. Registered blood donors elect to donate once every three months but only 5–10% comply without a reminder. As of 2008, there were approximately 150 registered donors; however, this pool of donors has been decreasing due to emigration and ageing. Approximately 35% of blood donations are voluntary, which does not satisfy demand and is below the GBB's current short-term goal of 50%. Overall, the GBB is heavily dependent on donations made on behalf of friends, workmates or family members needing blood transfusions. Additionally, common myths associated with blood donation discourage potential donors despite the GBB adhering to the PAHO approved standard criteria for donor assessment and selection (2).

St George's University comprises three schools: Medicine (SOM), Veterinary Medicine (SVM), and Arts and Sciences (SAS) and is Grenada's largest employer. The SOM and SVM enrollees are predominantly from developed countries, such as the USA, Canada and the United Kingdom while most SAS students are Grenadian (> 80%) with a smaller percentage from neighboring Caribbean countries, North America and Europe. The majority of SGU staff is Grenadian or other West Indian while the vast majority of faculty members are North American or European.

The "Blood for Grenada Project" is a collaborative effort between SGU-AMSA, SGU's health clinic (SGU-clinic), and the GBB. Two faculty members from the SGU's Department of Public Health and Preventive Medicine (DPHPM) and an SOM student spearheaded this collaboration. The collaboration's purpose was two-fold: i) to explore the ongoing relationship between SGU-AMSA, SGU-clinic, and the GBB and ii) to examine the perspectives, attitudes and behaviours of SGU's students regarding blood donation. The ultimate goal was to identify ways in which the collaboration between the three groups could be strengthened to more effectively improve promotion of blood drives and increase the number of voluntary donors. The goal was to achieve this in the context of: a) capacity building (27–29); b) health promotion (24, 29–31); and c) service-learning opportunities for students (25, 28, 30). Principles deemed significant to collaboration between the GBB and SGU included: a) reciprocity: establishing a relationship based on mutual benefit and partnership rather than on dependency or hierarchy (32); b) responsibility: being mu-

tually engaged from the start (28); and c) cultural sensitivity: tapping into and emphasizing the local culture (27, 33).

SUBJECTS AND METHODS

A two-phase approach was utilized. Phase 1 aimed at examining the ongoing collaboration between SGU-AMSA, SGU-clinic, and the GBB to identify ways in which it could be strengthened. Phase 2 examined the perspectives and behaviours of SGU's students regarding blood donation. Both phases received approval from SGU's Institutional Review Board and were implemented concurrently between September 2009 and October 2010.

Phase 1

This phase consisted of an assessment of the strengths and needs of the GBB, an assessment of resources provided by

conducted through meetings and interviews with the GBB staff as well as on-site observations of the GBB and SGU-clinic procedures. The assessment of the GBB's needs was combined with a technical assistance component aimed at capacity building.

Meetings with the GBB

Several personal meetings were held with the director and head nurse of the GBB and phone conversations were had between meetings. Initial meetings provided information exchange concerning both phases and identified the GBB's resources, goals and challenges. The meetings also served to gather information about blood drive-organization and how blood donations were obtained, stored and analysed.

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SGU-clinic in support of SGU-AMSA's blood drives, and an overall assessment of the blood drives. Assessments were

Meetings with SGU-clinic

These meetings were held with the clinic director who also serves as faculty advisor to SGU-AMSA. An initial meeting

served to discuss the proposed project and obtain his support since the SGU-clinic houses the monthly blood drives. The director also provided his perceptions on resources available at the clinic. Additional meetings were held in which modifications to the modality of the blood drives were discussed.

Service-learning experiences

Student involvement in phase 1 took a variety of forms. The leadership of SGU-AMSA participated in meetings with the GBB director and shared their perspectives on how the GBB and SGU-AMSA could best coordinate campus blood drives. Participating SOM students, most of whom were Master of Public Health (MPH) graduates of SGU: DPHPM, were actively involved in advertising the blood drives amongst classmates. A transfusion record database was created in Microsoft Access 2003 and given to the GBB. Transfusion data entry was performed by SAS students in the context of meeting their degree's community service requirements and facilitated by a SAS faculty member who coordinated the community service programme. Further transfusion data entry and quality control

were performed by a final term MPH student who did her eight-week MPH practicum at the GBB from May to June 2010. This student also performed statistical analyses of the data entered. Master of Public Health students piloted the cross-sectional survey implemented in Phase 2.

Phase 2

This phase consisted of three student assessments implemented at three different points during the year: (a) a cross-sectional survey of second year SOM students; (b) a cross-sectional survey of first year (first and second term) SAS students and (c) a case-control study of factors affecting student donation on the day of blood drives.

The cross-sectional surveys were implemented in October 2009 and 2010. Though using slightly different questionnaires, the objectives of both surveys were to: a) determine student knowledge of AMSA blood drives; b) determine previous and current blood donation habits and c) determine which factors were associated with non-donation. These objectives were operationalized in a structured three-part ques-

Table 1: Prevalence (P) and 95% confidence intervals (CI) for knowledge about American Medical students Association monthly blood drives among School of Medicine (SOM) and School of Arts and Science (SAS) students at St George's University, Grenada, West Indies

Knowledge	Level	SOM			SAS		
		n	P (%)	95% CI	n	P (%)	95% CI
Knowledge of existence of blood drives	Yes	270	74	70, 79	15	14	8, 22
	No	93	–		91	–	
	Total	363			106		
Knowledge of when blood drives occur	Yes	60	17	13, 21	2	2	0.2, 7
	No	303	–		104	–	
	Total	363¹			106		

¹Exact binomial confidence intervals

Table 2: Comparison of prevalences (P) and 95% confidence intervals (CIs) of major reasons for non-donation of blood by School of Medicine (SOM) and School of Arts and Science (SAS) students at American Medical Students Association monthly blood drives at St George's University, Grenada, West Indies

Reason	Response	SOM			SAS			¹ Chi-square	
		n	P (%)	95% CI	n	P (%)	95% CI	χ^2	p-value
Lack of time	Yes	188	57	51, 62	27	27	19, 36	27.7	< 0.0001
	No	144			74				
	²Total	332			101				
Fear of infection	Yes	86	27	22, 32	38	37	29, 47	4.2	0.04
	No	237			64				
	²Total	323			102				
Fear of needles	Yes	54	17	13, 21	32	31	23, 41	10.4	0.01
	No	273			71				
	²Total	327			103				
Lack of an incentive	Yes	62	20	16, 24	36	36	27, 46	11.5	< 0.001
	No	256			64				
	²Total	328			100				

¹Pearson's Chi-square

²Totals represent 363 (SOM) and 106 (SAS) minus the number of non-responses for each question

tionnaire.

The case-control study was conducted from February to April 2010 with data collected on the days of three consecutive blood drives. The objectives for the case control study were to: a) determine whether time-varying factors such as class and examination schedules affect blood donation and b) determine what other factors pertaining to the day of blood drives affect donations. The case-control study-questionnaire was divided into four parts, which included questions pertaining to knowledge of SGU-AMSA drives and respondent characteristics, in addition to the aforementioned objectives.

Service-learning experiences

During phase 2, students were involved in all aspects of the research project. Two different SOM students served as co-principal investigators of the cross-sectional survey of second year medical students and the case-control study. School of Medicine students helped in developing and piloting the questionnaire. Students from the three schools (SOM, SVM and SAS) collected data. As part of the information sharing process with the SGU community, students presented three posters and made one oral presentation at SGU's Research Day in January 2010.

Preliminary data analysis

Data were entered into a Microsoft Access 2003 database. During these preliminary data analyses, prevalences (P) and 95% confidence intervals (CI) were estimated and results for SOM and SAS students compared using the Pearson's Chi-squared test. All analyses were done using SAS/STAT software version 9.1 for Windows (34).

RESULTS

Phase I

The Blood Drives

Information gathered from the GBB, the SGU-clinic and observations made during blood drives (October 2009 to March 2010) served to make blood drive adjustments. These adjustments included having more on-site student volunteers to reduce student donor waiting times, adding another phlebotomist in order to accommodate more donors during peak hours (students' lunch break), and pizza for those who donated. There was increased advertising through the various student organizations, during class breaks, and the placing of more signs in strategic places. As a result of these efforts, the monthly donor number increased by an average of 20% until March 2010. However, this increase was only temporary and had no impact on the number of registered voluntary donors.

The GBB

As of January 2011, four students had entered transfusion data covering January 2009 to June 2010. Quality control had been performed, data entered had been checked and errors corrected. A statistical report on blood transfusions by hospital ward, indication, gender, donor and recipient blood group for January

to December 2009 was prepared and made available to the GBB director.

Phase 2

Student Assessments

Results of preliminary analyses of the survey data are presented in Tables 1 and 2. Three hundred and sixty-three (80%) of 452 second-year medical students (95% North American, 51% female) participated in one cross-sectional survey and 106 (74% female), predominantly Grenadian, first- and second-term SAS students (17% of total SAS student population) participated in the other. The cross-sectional surveys showed both similarities and differences between the two sets of students. In terms of knowledge, substantially more SOM students ($P = 74\%$, 95% CI: 70, 79) than SAS students ($P = 14\%$, 95% CI: 8, 22) knew of the existence of blood drives (Table 1). This was also the case with respect to knowledge of when the drives took place as 17% (95% CI: 13, 21) of SOM *versus* 2% (95% CI: 0.2, 7) of SAS students knew the blood drives took place on the first Wednesday of each month (Table 1). Substantial hindrances to donation identified by SOM students included lack of time ($P = 57\%$; 95% CI: 51, 62) and a fear of infection ($P = 27\%$, 95% CI: 22, 32). For SAS students, the greatest concerns included fear of infection ($P = 37\%$, 95% CI: 29, 47), lack of incentives ($P = 36\%$, 95% CI: 27, 46) and fear of needles ($P = 31\%$, 95% CI: 23, 41) [Table 2]. All differences in the prevalence of deterrents to donation between SOM and SAS students were statistically significant at the 5% level (Table 2). Seventy-five per cent (95% CI: 70, 80) of SOM and 59% (95% CI: 59, 79) of SAS students reported they would consider donating if their underlying concerns were addressed.

Five hundred and twenty-four (approximately 20% of the student body) students from all schools participated in the case-control study. On the three blood drive days for which data were collected, there were 72 cases (blood donors) and 452 controls (non-donors). Caribbean nationals represented 16% and 42% of donors and non-donors, respectively. Among non-donors, 66% of Caribbean and 57% of non-Caribbean students said they were unaware of the blood drives and 93% of both groups had not donated blood since enrolling at SGU. When questioned about their most significant concerns, a fear of needles (38%) and a lack of incentive (33%) were most often cited by Caribbean student non-donors while a lack of time (47%) was substantially the most common hindrance among non-Caribbean students.

DISCUSSION

This collaborative effort for the Blood for Grenada Project helped frame the country's blood needs and gather baseline information about both non-Grenadian and Grenadian students who are central to the GBB's efforts. Perhaps the single most critical element that this project has revealed is the inadequacy of blood drive promotion among students on the campus. Both the GBB and SGU-AMSA need to work to rectify this for substantial improvements to take place in blood donorship. Pre-

liminary data analysis revealed that non-Caribbean (primarily SOM) students contribute far more to meeting Grenada's needs than Caribbean students (primarily SAS). Thus, it seems necessary for the GBB and SGU-AMSA to expend energy in increasing the awareness of the need for blood among Caribbean students (who are primarily Grenadian). Not only should they bear the primary burden of donations but they also stand to benefit most, since targeted education and promotion to this group will likely have a multiplier effect once they graduate and enter Grenadian society. These results are also consistent with previous reports of fear of needles (6.7, 44%) and infection (4.8, 52.4%) among potential donors in developing country contexts (35) and also suggest that these student subgroups (Caribbean and non-Caribbean) have different major concerns relating to blood donation. The limited availability of time of SOM students and fear among SAS (Caribbean students) should be considered in both the promotion and execution of blood drives in order to substantially augment donorship. Fear, in particular, has previously been cited as the most common deterrent to blood donation in the developing world (35).

Student assessments confirmed that they represent a potential source of voluntary donors (9, 26) if their concerns are properly addressed. It would require little effort to educate students and engage them in activities related to blood donation. The implementation of the assessments served as the first step to awaken their consciousness to this possibility. The health fairs organized by SOM students, the health promotion class taught by SGU: DPHPM and the SAS community service requirement can also facilitate this effort. It is not farfetched that a well-motivated SGU student body alone could supply Grenada's blood transfusion needs. With a national population of approximately 100 000 to meet the island's transfusion needs, approximately 420 and 560 units of blood would need to be donated monthly at SGU-AMSA blood drives if they were held 12 and nine months per year, respectively. These figures correspond to approximately 13 and 20% of the student population, respectively donating monthly.

Both our preliminary findings and discussions with the GBB suggest that Grenada is no different from Trinidad and Tobago (19, 20) and other developing countries (9, 11–13) when it comes to the attitudes toward blood donation in that these tend to be reactive – in response to an immediate need or crisis, rather than proactive – on-going and voluntary, ensuring sustainability of the blood supply. A reversal of this tendency should be the goal of promotional/educational campaigns targeting Caribbean students on SGU campus.

Providing the GBB with both resources and expertise alleviated some of the difficulties resulting from understaffing and a lack of human resources. An important future goal is the conversion of all donor and transfusion records into electronic format. This collaboration showed that much of the GBB's archiving and data entry personnel needs might be resolved within the context of community service with SAS. More skilled technical expertise can be systematically accessed

through SGU: DPHPM if MPH students are allowed to complete their practicum requirements there. Their recently acquired skills can be used in the area of quality control, data analysis and report generation as they rotate through various GBB sections. In addition, the GBB has also benefitted from faculty member and student research expertise.

St George's University benefited by enhancing its image in the community and by offering further opportunities for students to broaden their skills through hands-on experience. For SOM students, this was a good opportunity to apply their public health knowledge and learn about existing health conditions in Grenada as well as about local attitudes towards blood donation. As stated by Céne *et al* (30), while physicians may participate in many community projects throughout their careers, they remain unaware of health needs and disparities. Offering students these opportunities early in their careers is important since trainees become “increasingly cynical and less concerned about the social context as their training progresses” (36). This is particularly likely in the context of an offshore university where foreign students essentially form an academic enclave insulated from the greater society. For MPH students, this was an opportunity to utilize research and evaluation skills and to establish assessment and promotion linkages. For SAS students, this opportunity offered insight into Grenadian health realities and fostered the development of social responsibility toward their country. They hold the key to attitudinal changes necessary to establish a sustainable blood replacement programme that can meet Grenadian health needs.

This ongoing project has various limitations. First, as there was no funding available and consequently no hired project staff, all work was conducted by volunteers and when the primary commitments of faculty and students permitted. This affected the efficiency and speed of execution of various project aspects. Second, the project's recruitment of Grenadian faculty members has been unsuccessful. We feel their involvement is important if the project is to impact Grenadians in a meaningful way. Third, there has been little support from SGU's administration. Were there more support, far greater resources would be at the project's disposal.

CONCLUSIONS

Limitations aside, this study made important first steps in the Blood for Grenada Project, gaining insight into the strengths and weaknesses of the ongoing collaboration between SGU-AMSA and the GBB. Collaboration between the GBB and SGU is important given their unique institutional characteristics. As an offshore university, SGU has its own organizational culture that translates into operational rules, attitudes and approaches that should be mediated through ongoing exchanges with the GBB to prevent cultural clashes and perceptions of “cultural imposition” or domination. Part of this mediation can be achieved through the students, who in addition to being an excellent source for developing a core of voluntary repeat donors, can act as ambassadors and promoters of blood donation both among their peers and the wider society. This is pos-

sible as blood donation can be promoted in the context of health fairs and other community activities in which SGU-AMSA participates. At SGU, Grenadian students are exposed to information, activities and behaviours which influence their own behaviours. They are also likely to share their experiences with other community members, indirectly serving as instruments of knowledge transfer.

Through this project, the GBB expanded its collaboration with SGU, resulting in positive outcomes for both. Nevertheless, the GBB needs to be more proactive by making its presence known at SGU activities such as student orientations and SGU-AMSA meetings. For the further improvement of this collaborative effort and the growth of the voluntary donor pool, an ongoing process of outcome evaluation of the collaboration, blood drives, and the blood drive promotion needs to be established. Continuing to provide students with service-learning opportunities will partially address this need since students can promote blood drives perform data entry and monitor both these activities. They can also participate in the continual assessment of the attitudes and perceptions of both the student and the larger Grenadian population in order to assist the

GBB in devising effective promotional campaigns.

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