ORIGINAL ARTICLE

Identification of current best practices for short-term medical mission trips and adherence to current common principles and guidelines

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Abstract

Background: Recent reviews of published guidelines for conducting short-term medical missions (STMM) identify significant concerns about the lack of adherence and of formal regulations concurrent with the increasing number of individuals and organizations participating in STMM.

Method: A descriptive survey methodology was used. A 44-item survey that identifies current practices utilized by healthcare providers (HCP) who have participated in STMM was used based on the literature and prior research, and distributed electronically to HCP participating in STMM to identify current best practices and compare findings with the most recent recommendations for short-term global health activities. A focus on current operational practices was surveyed and analyzed to develop operational recommendations for the ethical and safe care provided during STMM**.**

Results: Eighty-seven surveys were included in the final analysis with 33% (N=29) serving as coordinators for the trip. The majority of the respondents were female (67%), and the primary roles represented were: MD (N=17; 20%), nurse practitioner (N=20; 23%), and registered nurse (N=18; 21%). A majority (N=48; 67%) traveled to South America or Latin America with 38% (N=33) having participated in four or more STMM. Language proficiency was reported as deficient (N=35; 40%) along with little or no knowledge of the basic culture (N=39; 45%). Additional data were collected on trip preparation, clinic operations, and outcomes follow up.

Conclusions: Using a convenience sample, the results of the survey provide information on the current practices utilized by HCP who have participated in STMM and compare the findings to assess for adherence with the most recent recommendations for short-term global health activities. There was variation in the degree to which HCPs were knowledgeable about specific aspects related to knowledge of local culture, language proficiency, and adherence to recommended practices for STMM. Additional research on STMM is needed, along with further exploration of how evidence-based practices for STMM can be implemented to improve access and safety to the care provided while in the host country.

Key words: Short-term medical missions, guidelines, best practices, global health**,** medical mission

Introduction

Over the past decade there has been an increased focus and participation in short-term medical mission trips (STMM). Approximately 6000 trips are taken each year by interdisciplinary teams comprised of medical and non-medical volunteer participants to provide medical care in low-income countries.[1] The term "short-term medical mission" was developed to identify travel by healthcare providers (HCP) for less than two weeks to underserved areas to provide medical services.[2] Healthcare team members may face language and cultural barriers, difficult environmental conditions, and may often lack the appropriate resources to provide quality care. Resources such as access to medical records, lab facilities, and referral services for follow-up care are often suboptimal or non-existent. These barriers may affect the long-term sustainability of medical services within the community and may have negative effects on the overall host healthcare system.[1] A systematic literature review identified limited standardized formal guidelines for regulation, credentialing, or procedures for coordinating STMM. Improved data collection and reporting and quality improvement could improve the process for organizations supporting missions. Due to the altruistic nature and volunteerism equated with STMM there remains a lack of regulations and reporting of outcomes. Without data to substantiate the services provided by these volunteer groups, implementing standards and improvement processes is challenging. This finding is supported in the literature; several authors identify a lack of practice recommendations for STMM.[2-4] Guidelines established by the Working Group on Ethics Guidelines for Global Health (WEIGHT) focus on trainees sent to work in global health and are not specific to STMM. Additionally, guidelines and reported outcomes for surgical missions are more prevalent in the literature than global standards for STMM.[4] Published systematic reviews on STMM are primarily descriptive and emphasize monitoring and evaluation of outcome data as best practice for organizations to evaluate the services provided.[3,5] An integrative systematic review of the literature revealed a lack of evidence in the literature that supports the use of practice guidelines that have been evaluated for STMM occurring outside of the United States (US).[6] The short time frame of the STMM with a primary focus on the provision of care is seen as a barrier to the lack of structure, outcome measurement, and guideline adherence. It has been identified that lack of clear definitions and standards can affect the coordination of STTM and may even harm the host community and perpetuate global health inequities.[7]

Current Published Guidelines and Core Principles

The World Health Organization (WHO) has numerous evidence-based guidelines developed in collaboration with US-based faith based organizations (FBOs) to provide quality care in the current dynamic global healthcare environment. The Best Practices for Global Health Missions (BPGHM) and International Standards and Guidelines (IS&G), based on the WHO standards, are readily available to provide practice standards to meet the legal requirements, medical standards, and practice guidelines from the varying host countries.[8]

One of the most important publications to date that gave insight to current practices and guidelines for STMM was a study conducted by Catholic Health Association (CHA). [9] The survey with over 500 respondents provided data to identify current practices of participants in effective STMM and provide the basis for the development of recommendations for practice. These recommendations focused on the areas of partnerships, funding, orientation and selection of volunteers, volunteer activities, evaluation, and sustainability.[9] The most recent published evidence

was a mixed methods study that revealed similarities and differences between the preferences of the organizers and host communities relevant to length of the trip and selection and preparation of volunteers. The data from this study which combined three surveys and four interviews from 2012 to 2015 were used to revise the CHA recommendations and create the Guiding Principles for International Health Work.[10] Despite current research focused on identifying current practices of STMM organizers and preferences of the host communities to add to the current literature and provide recommendations for groups participating in STMM, gaps are present and adherence to these recommendations are still lacking. Countries are in various stages of adopting and enforcing the published IS&G.[8] Current published guidelines for STMM practice primarily address the establishment of a system for planning and organizing teams for travel. The recruitment and orientation of volunteers, collaborative relationships with host community, and outcome reporting are outlined to provide recommendations or core principles for guidance of ethical and sustainable mission practice.[7,11,12] However, insufficient evidence remains on the implementation and adherence to these recently published guidelines, as well as recommendations for operational best practices on these humanitarian and faith-based STMM.

With an increasing number of medical and non-medical providers participating in STMM, a focus on current practices for caring for patients in medical clinics during these short-term humanitarian trips is warranted. A review of the literature revealed little evidence in best practices or on adherence to recently published recommendations that would provide vulnerable communities access to quality, sustainable, and culturally sensitive care. This paper reports the results of a descriptive survey that identified current practices utilized by HCPs who have participated in STMM and compared the findings with the most recent recommendations for short-term global health activities. Current operational practices of the HCP surveyed will be reported to add to the growing body of evidence and recommendations developed for more ethical and safer care provided during STMM.

Methods and Materials

A comprehensive review of the literature, an environmental assessment, and key informant interviews of providers who participate in a STMM using a convenience sample were used to identify the problems with current practice and survey development. Using an electronic survey reporting system, completed data were collected and analyzed for demographics, description of current practices, and comparisons to current published recommendations.

Survey Instrument

A study survey was compiled based on a comprehensive review of the literature and published results from previous surveys to gather data related to current best practices of STMM.[9,11,12] The survey consisted of 44 questions that were organized into four different themes: demographics, preparation, operations, and outcome measurements. Demographic data on gender, age, education level, primary role, type and number of trips, and continent traveled to were collected. The type of care provided was assessed to include medical, preventive health, dental, eyeglasses, or other. Assessing whether or not the participant was the coordinator of the trip was obtained. This information was deemed important when looking at data collected on needs assessment, orientation, and outcomes measurement.

Preparation was assessed by asking respondents specifics to the receipt, type, and length of an orientation. Open-ended responses were allowed for participants to describe what information was provided in the information sessions. Participants' knowledge of the language and culture, as well as use of interpreters including local interpreters were collected. Additional ethical and legal considerations were addressed in the preparation section through questions related to the registration of healthcare providers with the host

country's Ministry of Health (MOH) or equivalent, establishment of a memorandum of understanding (MOU), completion of a needs assessment or site survey, and inclusion of local providers in the planning and provision of care.

The collection of data on current practices of clinic operations were the focus of the survey. The analysis of operations data will provide the basis for recommendations for future practice and to fill the gaps in the current guidelines.

Recruitment of Participants and Survey Distribution

HCP and coordinators of organizations based in the southeastern US who were known to participate in STMM through personal or professional affiliation were contacted for study participation. Additionally, an Internet search was conducted and emails sent to organizations who participated in STMM. The assessment survey was distributed electronically to a convenience sample of HCP who met the criteria for the identified sample population. Inclusion criteria included 1) licensed health care provider, 2) participation in at least one previous medical mission trip of two weeks duration or less, and 3) English as the primary language. Disaster and relief missions, military, and government sponsored medical missions were excluded. Because the focus of the study was on medical missions, research and data collected on surgical missions were excluded from the data analysis. Participation in the survey was voluntary and anonymous. A response rate is unable to be calculated as it is not known how many participants received the email invitation for the study. No compensation was provided to participants and Institutional Review Board approval was obtained from Samford University.

Data Analysis

One hundred and sixteen surveys were collected and 87 were selected for analysis. Surveys were excluded if they did not meet the inclusion criteria or were less than 50% complete. Surveys meeting the inclusion criteria were collected and analyzed for demographic data of key stakeholders and identification of current practices of the HCP surveyed. The current practices identified were compared to the most current published recommendations and core principles for ethical, responsible, and safe STMM. Additional data collected related to clinic operations and the more technical aspects of the clinical services provided during STMM were evaluated to begin to establish core operational recommendations for clinic practices.

Results

Demographics

Approximately two-thirds of the respondents were female (N=55; 68%), and almost half of the respondents reported their role in the STMM as that of HCP (providing medical diagnosis and treatment). Other roles included religious advisor, emergency medical technician, optometry, clinic administrator, and pharmacy student. A majority of the participants had a master's degree or above (N=60; 69%) followed by a bachelor's degree (N=18; 21%), associate's degree (N=4; 5%), and a high school diploma (N=5; 6%). The majority participated in a faith-based trip (N=73; 84%), and 54% (N=47) reported self-pay for funding their travel. Additional demographics are located in Table 1.

Table 1. Demographics (N=87)

	N	N(%)
Gender	81	
Male		26 (32.1)
Female		55 (67.9)
Age (years)	86	
20 – 30		21 (24.4)
31 – 40		12 (14.0)
41 – 50		16 (18.6)
51 – 60		22 (25.6)
>60		15 (17.4)
Education	87	
High School Diploma		5 (5.7)
College – Associate's Degree		4 (4.6)
College – Bachelor's Degree		18 (20.7)
Master's Degree or Above		60 (69.0)
Type of Mission Trip	87	
Faith based		73 (83.9)
Humanitarian		14 (16.1)
Primary Role	87	
Physician		17 (19.5)
Nurse Practitioner		20 (23.0)
Physician's Assistant		2 (2.3)
Pharmacist		10 (11.5)
Nurse		18 (20.7)
Other		20 (23.0)
Short-term Medical Mission Trips Past Five Years	86	
1		27 (31.4)
2		18 (20.9)
3		8 (9.3)
4 or more		33 (38.4)
Continent (most recent trip)	87	
Africa		13 (14.9)
South America		32 (36.8)
Central America		26 (29.9)
Other		16 (18.4)
Type of Care Provided		
Medical	87	81 (93.1)
Community/Preventive Health	87	38 (43.7)
Dental	87	29 (33.3)
Eyeglasses	87	53 (60.9)
Other	87	8 (9.2)
Funding	87	
Fully funded by sending organization		9 (10.3)
Partially funded and self-pay		28 (32.2)
Self-pay		47 (54.0)
Other		3 (3.4)
Trip Coordinator or Supervisor	86	
No		57 (66.3)
Yes		29 (33.7)

Preparation

The trip preparation assessment included orientation, knowledge of local culture, language proficiency, as well as pre-trip planning and registration of HCP (see Table 2). Receiving orientation prior to the trip was reported by 86% (N=72) of the respondents with the median number of training sessions as three. Overall, 46% (N=40) of the HCP reported a basic fluency in the local language, however language proficiency was relatively deficient as 40% (N=35) did not speak or understand the language, followed by conversational (N=10; 12%) and proficient (N=2; 2%). Over forty-five percent (N=39) reported knowing little or

nothing about the culture. Local interpreters were used (N=81; 93%) and each HCP had an interpreter (N=70; 81%) a majority of the time. It was reported that local providers were involved in the planning and provision of care 80% of the time. A majority reported they did not know if the group completed a Memorandum of Understanding (MOU) (N= 60; 70%), and less than 26% (N=22) reported to have a MOU with the host country. Less than 22% (N=19) reported HCPs were registered with the Ministry of Health (MOH). Although 41% (N=35) of the HCPs reported a needs assessment was conducted prior to the STMM, of concern was 45% (N= 39) of the respondents did not know if a needs assessment was completed prior to travel. The authors hypothesized that those serving as a trip coordinator (N= 29; 34%) were more likely to have knowledge of the completion of these preparations. However, the survey identified that 19 (66%) trip coordinators were not aware of the completion of a MOU and 10 (34%) did not know if the participants were registered with the MOH. Additionally, 12 trip coordinators (41%) did not know if a needs assessment was conducted prior to the trip.

Table 2. Preparation* (N=87).

	N	N(%)
Orientation or Training Prior to Trip	84	
No		12 (14.3)
Yes		72 (85.7)
		Median [IQR]
# of training sessions	72	3.0 [1-4]
Fluency in Local Language	87	
Basic		40 (46.0)
Conversational		10 (11.5)
Proficient		2 (2.3)
Did not speak or understand the language		35 (40.2)
Did each healthcare provider have an interpreter?	87	
No		16 (18.4)
Yes		70 (80.5)
Don't know		1 (1.1)
Were local interpreters used?	87	
No		4 (4.6)
Yes		81 (93.1)
Don't know		2 (2.3)
Knowledge of Local Culture	86	
Knew nothing about the culture		13 (15.1)
Knew little about the culture		26 (30.2)
Average knowledge		24 (27.9)
Very comfortable		23 (26.7)
# of Healthcare Providers on Trip	87	
<5		32 (36.8)
6 - 10		32 (36.8)
>10		23 (26.4)
Needs assessment or site survey completed prior to travel	86	
No		12 (14.0)
Yes		35 (40.7)
Don't know		39 (45.3)
Local providers included in the planning and provision of care	87	
No		10 (11.5)
Yes		70 (80.5)
Don't know		7 (8.0)
Organization had memorandum of understanding with host country	86	
No		4 (4.7)
Yes		22 (25.6)
Don't know		60 (69.8)

All short-term medical mission trip licensed healthcare providers registered with the Ministry of Health in the host country (or equivalent) prior to travel to the host country	87	
No		19 (21.8)
Yes		19 (21.8)
Don't know		49 (56.3)

* All respondents reported use of interpreters on mission trip.

Clinic Operations

Clinic operations were assessed to identify common practices among varying mission teams and results are detailed in Table 3. Forty-five percent (N=39) reported that patients were recruited by word of mouth with 61% (N=53) of the clinics being held in a church building or school. Less than 22% (N=19) provided care in an existing clinic or hospital. A majority of the patients (N=78; 90%) were required to register prior to seeing a provider and 57% (N=48) of those patients were triaged during registration to determine the level of care needed. On average, it took zero to ten minutes (N=72; 85%) to register a patient using a standardized paper form (N=57; 66%). Blood pressure was taken in 87% (N=69) of the STMM and other vital signs or medical information were documented such as height, weight, temperature, respirations, heart rate, blood pressure, and allergies greater than 50% of the time. Forty percent stored the collected data and paper files were the most common method utilized (54%). A majority of the clinics lasted an average of five days with up to 1000 patients seen during that time. The respondents reported that 50% of the time was spent in patient care activities with 50% of that in curative treatment and only 20% in preventive care and education.

Table 3. Clinical Operations

	N	**N (%)**
Patient recruitment	87	
Word of mouth		39 (44.8)
Local advertisements/Flyers		10 (11.5)
Local representative		29 (33.3)
Other		9 (10.3)
Location of clinic	87	
Existing health clinic or hospital		19 (21.8)
School		36 (41.4)
Vacant building		28 (32.2)
Church		53 (60.9)
Other		15 (17.2)
Were the patients required to register prior to seeing a provider?	87	
No		5 (5.7)
Yes		78 (89.7)
Don't know		4 (4.6)
During registration was the level of care (triage or prescreening) needed by each patient determined?	84	
No		15 (17.9)
Yes		48 (57.1)
Don't know		21 (25.0)
On average how long did it take to register a patient?	85	
0 - 5 minutes		57 (67.1)
6 - 10 minutes		15 (17.6)
10 - 15 minutes		6 (7.1)
Not applicable		7 (8.2)
Did you use a standard form or protocol for screening patients?	86	
No		12 (14.0)
Yes		57 (66.3)
Don't know		17 (19.8)
Information collected from patients seen at the clinic	79	

Height		32 (40.5)
Weight		41 (51.9)
Temperature		52 (65.8)
Blood pressure		69 (87.3)
Respirations		37 (46.8)
Heart rate		56 (70.9)
Allergies		53 (67.1)
Other		13 (16.5)
Did you collect and store demographic data?	86	
No		22 (25.6)
Yes		35 (40.7)
Don't know		29 (33.7)
How was patient data stored?	82	
Paper/file		44 (53.7)
Computer		2 (2.4)
Not stored		14 (17.1)
Don't know		22 (26.8)
Average # of patients seen per day	85	
<50		7 (8.2)
51 - 150		40 (47.1)
151 - 200		15 (17.6)
201 - 300		14 (16.5)
>300		9 (10.6)
Average # of patients seen over course of trip	84	
<250		14 (16.7)
251 - 500		23 (27.4)
501 - 750		16 (19.0)
750 - 1000		15 (17.9)
>1000		16 (19.0)
Did you provide meds to patients during the medical mission trip?	84	
No		6 (7.1)
Yes		77 (91.7)
Don't know		1 (1.2)
How are medications procured for the trip?	83	
Brought to host country		34 (41.0)
Purchased in host country		9 (10.8)
Both		36 (43.4)
Don't know		4 (4.8)
What were the most common medications provided?	82	
Antibiotics		69 (84.1)
Contraceptives		7 (8.5)
Multivitamins		69 (84.1)
Anti-parasitics		55 (67.1)
Analgesics		64 (78.0)
Topical creams and lotions		50 (61.0)
Other		10 (12.2)
		Median [IQR]
# of Days Medical Clinic Ran	84	5.0 [4-5]
% of time spent on activities during the mission		
Patient Care	79	50.0 [40-70]
Patient Health Education	72	10.0 [5-14]
Team Building	77	15.0 [10-20]
Religious activities in the community or clinic	72	10.0 [5-20]
Other	37	15.0 [0-30]
% of time spent in areas during clinic		
Curative Medicine	80	60.0 [35-80]
Preventive Health	73	20 [10-40]
Spiritual Counseling	65	10.0 [5-30]
Other	23	10.0 [0-40]

Medications

Ninety-two percent (N=77) of the respondents surveyed provided medications during the trip. When questioned about procurement, 41% (N= 34) brought medications into the country, and only 11% (N= 9) purchased in the host country. The most common medications provided included antibiotics (N=69; 84%) and multivitamins (N=69; 84%). Respondents also indicated additional medications provided including analgesics (N=64; 78%), anti-parasitics (N=55; 67%), and topical creams and lotions (N=50; 61%).

Outcomes Measurement

To determine whether organizations were focused on outcomes measurement, several questions were asked related to post STMM questionnaires for both the participants and host communities (see Table 4). Forty-two percent (N=35) reported that HCPs who participated in the survey were asked to complete a post mission questionnaire to determine the impact/satisfaction of the trip participant. An additional 23% (N=19) did not know if they were requested to complete a questionnaire. Thirty-seven percent (N=31) denied the host community completed a post mission questionnaire, and 35% of the trip coordinators (N=10) reported they were not aware of a host post trip questionnaire to evaluate the impact of the STMM.

Table 4. Outcome Measures

	N	N (%)
Healthcare providers who participated in the short-term medical mission trip asked to complete a post mission questionnaire for determining the impact and/or satisfaction of the individual participating in the trip	84	
No		35 (41.7)
Yes		30 (35.7)
Don't know		19 (22.6)
Host community completed a post mission questionnaire to evaluate the impact of the medical mission	84	
No		31 (36.9)
Yes		9 (10.7)
Don't know		44 (52.4)

Discussion

The responses from the study add information to the characteristics of STMM found currently in the literature. As participation in STMM continues to grow, it is imperative for STMM to be held to a standard of care to do good and prevent harm to the community they serve. The recent publication of effective practices and guidelines for culturally sensitive, safe, and sustainable medical care is the first step in providing evidence organizations can utilize to develop their models of care to improve outcomes and sustainability of their programs.[11] However, a gap in the literature was identified in the area of clinic operations as previous studies primarily focused on the selection of and preparation for teams to travel on STMM. Lasker et al. (2018) emphasized, in a review of existing guidelines, a need to focus on general guidelines for safe and ethical care and to translate these guidelines into "action" in order to improve the quality of STMM. The findings from this study were compared to the published guidelines to determine adherence.

Trip Participants

These demographic statistics are consistent with the published research findings. There are a large number of people who are seeking to travel on STMM and willing to use personal financial resources to fund the trip. The CHA study

reviewed reported over one-fourth of those surveyed had been on one trip, and 44% had gone on four or more trips in the past five years.[9] The type of trip, religious motivation, and educational preparation of the respondents were most likely influenced by the researchers' professional affiliations with a private Christian university.

Lack of Preparation

A majority of the respondents reported the STMM sponsor organization offered an orientation, however, there was great variability in the type, length, and content provided. Only 2% of respondents (N=2) reported language proficiency. Previous studies identified the hosts' desire for volunteer preparation to include a stronger focus on knowledge of culture, language, and environmental conditions of the host country.[12-14] The results of this study support the assumption that adherence to orientation guidelines are not being met. It is recommended that organizations focus on providing volunteers with face-to-face training, preferably with host orientation facilitators with content focused on language, culture, local customs, and practices (including dress and behavior), and environmental conditions.[10,11] Implementation of standardized orientation for volunteers regardless of experience, though challenging, should also include information on the religious and political climate and principles of community development.[1,2] Lough et al. (2018) concluded that organizations participating in STMM can establish better partnerships, and the care delivered is perceived as more effective when the participants are well prepared and care is evidence-based.[14]

Another key component identified in the guidelines addresses the involvement of local host partners in the needs identification and planning of the care provided on the STMM.[11-14] The pre-trip planning activities rely on establishing a relationship and maintaining contact with the host community partner to plan, recruit patients, and operate the clinic on-site. These activities are best accomplished through a site survey with the completion of a needs-assessment followed by the development of mission objectives.[15] The survey identified a lack of adherence by trip coordinators to complete a needs-assessment and establish a MOU as part of the pre-trip planning activities. Best practice supports the need to involve the local community in the planning phase and have a MOU that clearly outlines the services to be provided, delineates the roles and expectations as well as establishes a mutual understanding of a partnership between the host community and mission organization.[9,11-16]

The results of this study identify that those serving in a coordinating role were more knowledgeable about the registration of the HCPs with the MOH yet a large percentage of the HCPs still reported that they did not know if they were registered. Providers have an ethical responsibility to provide care within their scope of practice. The laws of the host country should also be obeyed which may include registering with the country's MOH or equivalent. This information should be included and completed as part of the providers' trip orientation. The lack of knowledge by trip coordinators and providers in these areas could have significant ethical and safety implications.

Outcomes Measurement

The WHO organization recommends a systems-thinking approach as a core principle to plan and evaluate interventions to maximize the health of the global community. A systems approach involves collaboration with the host community in the pre-trip planning as well as appropriate follow up for quality improvement.[16] A strong systems approach is imperative to provide safe, effective, quality care.[16] It is interesting to note that only approximately one-third of the respondents were asked to complete a post trip evaluation. STMM coordinators and trip planners cannot adequately address issues,

concerns, or problems if trip participants are not given the opportunity to voice their experiences. Multiple outcomes should be measured that go beyond the number of patients seen and the number of prescriptions dispensed. STMM participants and host country partners should discuss what went well and what needs to improve at each clinic site. Input from host partners is valuable because they know the population being served and what is appropriate in the culture. We need to be respectful of other HCPs in the host country and involve them as much as possible and appropriate the goals and purposes of the STMM sending organization.[11,13,14,16-17] The key to building sustainable and collaborative relationships with the host countries requires a shift in focus on participant experiences to assessment of the host community outcomes and experiences to encourage improving the identification and quality of needed services.

An analysis of the survey data was used to make recommendations on clinical operational practices for STMM (see Table 5). Specific data on clinic operations help to close the gap on guidelines for the "boots on the ground" work the mission organizations provide in the host country. Commonalities exist between a STMM medical clinic and the operation of a free medical clinic in the US. According to the *Legal and Operational Guide for Free Medical Clinics*, free medical clinics provide a variety of primary care medical services to low income residents in an underserved area. These clinics staffed by volunteers provide care for minor medical problems, some pharmacy, dental services, and referrals for emergency and more medically complex problems.[18] Free medical clinics in the US have the advantage of sustainability of services for follow-up and legal safeguards in place for pharmacovigilance that are not consistently evident in STMM.

Clinic Operations Recommendations

Table 5. Recommendations for Clinical Operations for STMM

- A standardized orientation providing volunteers with face to face training, preferably with host orientation facilitators with content focused on language, culture, local customs and practices (including dress and behavior), religious and political climate
- HCPs should be registered with the MOH or equivalent and should only provide care within their scope of practice
- Involve local health care practitioners (HCP) as partners to the team who would be willing to provide trip planning, onsite operations, and continuity of care to foster communication and sustainability
- A medical director should be appointed who is responsible for the oversight of the health services provided during the STMM
- Patient intake utilizing a standardized form is essential to obtain the information needed for safe, effective, and equitable care
- Local interpreters should be used for patient intake, triage, and with HCP for establishing trust and obtaining accurate health history information
- Standards for minimal demographics and health data, including allergies should be developed
- Organizations participating in STMM should adhere to the WHO published *Guidelines for Medicine Donations* which state there should be no double standard in quality
- The establishment of a portable medical record to provide for safety, sustainability, and continuity of care
- Maximize time and resources by addressing the needs of the community's most vulnerable populations by shifting care to focus on health promotion and disease prevention (HP&P) rather than drug based curative care

Clinic operational data collected revealed common practices in the recruitment of patients (word of mouth), clinic location (existing structure like a church or school), and the registration of patients using a standardized form. Prior to the trip, input for the local partners should be obtained as to the type of services provided, location for the clinic and the recruitment of patients. Guidelines exist for international medical teams responding to disasters that provide the minimal standards of

care for initial assessment, triage, and pharmacy services.[18] The WHO (2013) states a field hospital can be set up in an existing or temporary structure during emergency humanitarian relief operations.[19] These evidence-based recommendations may serve as a starting point for STMM. Providing care in a non-health care setting without adherence to standards may lead to system failures that can cause harm to the patients and communities served.[16] Though not always feasible in the STMM setting, every effort should be made to provide care in an established clinic or healthcare facility. Additionally, a medical director should be appointed who is responsible for the oversight of the health services provided during the STMM and serve as a resource responsible for the supervision of the clinic HCP and staff.[18,20]

Information Collection and Storage

Patient intake utilizing a standardized form is essential to obtain the information needed for safe, effective, and equitable care. The form must be clear and concise. The challenge is determining how much data is needed and if the information provided is accurate and dependable.[18] Cultural and language barriers are the biggest obstacles to establishing trust and obtaining reliable information. For these reasons, host providers and local interpreters should play a key role in clinic operations. Questions to obtain personal and confidential healthcare information should be asked as they appear on the form in an objective, unbiased, and respectful manner. Using local interpreters or community representatives to assist patients to complete intake forms may be helpful in this process. Local interpreters should be used to facilitate communication with individuals who have limited language proficiency and each HCP should be assigned an interpreter.

Health Data and Medication Management

Most respondents reported collecting general patient demographics and vital signs; however, of concern was that with 92% reporting the distribution of medications, less than half assessed allergy status on the patients seen. The Institute for Healthcare Improvement (IHI) recommends that allergy information be collected at the time of admission to the healthcare setting, recorded immediately, and made available in multiple locations to anyone who may order or administer medications.[21] Standards for demographics and health data, including allergies, should be developed. Based on the survey results, the authors recommend the name, date of birth, allergies, weight, temperature, heart rate, respiratory rate, and blood pressure should be assessed and documented on every patient. Understanding individual patient factors, including knowledge of allergies, are imperative for providing treatment and safely prescribing medications.

The survey reported a low adherence to the storage of medical records with approximately half utilizing a paper form. It is most useful to establish the portable medical record and electronic database as these would provide for a safer and more efficient process. In communities with internet capability and resources to maintain internet service, utilizing electronic databases would be an ideal method for documenting patient information and health service encounters as well as for providing continuity of care. A systematic review of the literature revealed limited availability of electronic systems for medical data collection on STMM.[21,22] Several systems have mobile capabilities; however, the interoperability in low resource settings is challenging. Increased use of smartphones internationally provides future opportunity for use of applications such as QuickChart, NotesFirst, and iChart. Accurate data collection and storage would provide much needed data for increased accountability, outcomes measurement and provide evidence for future quality improvement in STMM.[22]

The procurement, management, and distribution of medications in resource-limited

settings has significant ethical and safety implications. The risk of adverse drug events even in the most ideal conditions with safeguards in place has gained national attention. The STMM setting places a patient at a much greater risk for a medication error due to a multitude of factors, including time constraints, lack of patient health information, deficient or absent testing capabilities, and cultural and language barriers.[24,25] Free clinics in the US who receive drug donations must follow explicit federal and state guidelines, reporting, record keeping, registration, and licensure requirements.[18] Organizations participating in STMM should adhere to The World Health Organization's (WHO) published *Guidelines for Medicine Donations* which state there should be no double standard in quality.[24] There has been increased attention on the harm from drugs provided during STMM and strong recommendations that drug based care not be provided until appropriate pharmacovigilance and patient safety systems are established.[25] Yet, 92% of HCP surveyed reported the provision of medications during the STMM. This lack of adherence to established guidelines is alarming.

International practice standards and guidelines as well as local laws of the host community should be adhered to if drugs are going to be distributed to a community.[24-25] Pharmacies should be staffed with consistent well-trained staff and interpreters.[14,25] Establishing a formulary of essential medicines is a critical component of preparation for a medical mission. The formulary should be evidence-based and developed with regard to disease prevalence, efficacy, antibiotic resistance, safety, and cost-effectiveness.[23] In accordance to the WHO guidelines, all medications should be properly labeled, using international non-proprietary name (INN) or generic name, batch number, dosage form, strength, name of manufacturer, quantity, storage instructions, and expiration date.[24] Providers should consider the use of a pictogram to prevent administration errors.[23] Future research is warranted on the dangers of drug based STMM on the patients they serve, the lack of compliance with the WHO *Guidelines for Medical Donations*, and the justification for providing non emergent pharmacy services during STMM.[24,25]

Care Considerations

It is difficult for HCPs participating in STMM to effectively medically manage patients with acute and chronic conditions without appropriate infrastructure, reliable communication with host partners and referral networks within the host country. Treating common bacterial infections requires minimum laboratory capabilities to properly diagnose for effective treatment. A typical occurrence is that patients request treatment for conditions they are not currently experiencing to obtain access to medications and this poses a dilemma for HCPs and host partners. The reporting of non-existent chief complaints has been observed in the researcher's experience in STMM. Despite these challenges the HCPs surveyed reported 50% of their time was spent on curative care and only 20% on preventive health education.

An approach that might support the goal of helping people obtain optimum health is to shift the effort from curative care to health promotion and disease prevention (HP&P) activities. Redesigning the clinic services with a focus on HP&P rather than curative medicine to address the community's priorities can foster sustainable safe and ethical care.[12,26] Groups can maximize time and resources by addressing the needs of the community's most vulnerable populations by shifting away from curative services.[7,11-13,26,27] A focus on preventive health education and training for ongoing health education programs that are sustainable after the mission teams have left could better benefit the communities they wish to serve.

Study Limitations

There are several limitations to the study. The convenience sample of participants primarily came from faith-based organizations as reflected

in the type of trip participated demographic. With the surge in for-profit STMM making travel more accessible to HCP and competing with faith-based trips, future research is warranted to compare the impact of the different groups. The online survey format relied on participant self-report or recall of the STMM and is not representative of an actual practice audit. Data were not collected to reflect the amount of time that had passed since the participant had participated in the STMM. The study response rate is not able to be calculated and is another study limitation. The researcher reviewed all the raw data and eliminated all respondents that did not meet inclusion criteria prior to statistical analysis; however, this does not guarantee all responses were from non-surgical providers. Additionally, the questions specific to clinic operations related to tasks and procedures unique to medical clinics, not surgical care.

Conclusion

This study identified variation in the degree to which STMM trips incorporated recommended best practices related to preparation, pre-trip needs assessment, onsite management of care including medication administration, documentation of data obtained during the visit, and post-visit surveys from participating HCPs. In comparing HCPs to those who served to coordinate the STMM, it was found that trip coordinators were more knowledgeable about the registration of HCPs with the MOH. However, a lack of knowledge regarding host partner involvement in planning and the completion of a needs assessment in trip preparation were identified as areas needing improvement for all participants in STMM. Additionally, a majority of HCPs were unaware of their own registration with the host country MOH, a legal and ethical responsibility. The collection of clinical operations data provided common practices and areas needing improvement to fill the gaps in the preparation, operation and outcome evaluation of STMM.

Implications for future research and practice

Adherence to guidelines for drug-based STMM needs to be addressed. A shift from curative care towards a more holistic HP&P approach could address many of the systemic problems and fragmentation in care. The standardization of these processes and additional operational practices could contribute to improved outcome measurement and enhanced sustainability to improve access to safe and effective care during STMM. Additional research is needed, along with further exploration of how evidence-based practices for STMM can be implemented, to improve access and safety to the care provided while in the host country.

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