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Travel Health-Related Preparation Practices of Institutions of Higher Education and Occurrence of Health-Related Events among Undergraduate Students Studying Abroad, 2018–2021

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Abstract

Background: Knowledge of specific health-related events encountered by students studying abroad and the availability and use of pre-travel healthcare for these students is lacking. **Methods:** Anonymous web-based questionnaires were sent to study abroad offices, student health centers, and undergraduate students after studying abroad at eight institutions of higher education in the United States and Ireland from 2018–2021. Analyses were descriptive; relative risks and 95% confidence intervals were calculated for health-related events. **Results:** One study abroad office required a pre-travel consultation. All student health centers had pre-travel counseling available. Among 686 students, there were 307 infectious and 1,588 non-infectious health-related issues; 12 students (2%) were hospitalized. Duration of travel and timing of a pre-travel consultation impacted

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the risk of health-related events. Certain mental health conditions were associated with increased risk of alcohol and drug use. **Conclusion:** Future studies should address the optimal timing and best practices to optimize health for students studying abroad.

Keywords

Alcohol, drugs, mental health, pre-travel consultation, study abroad

Introduction

The number of students studying abroad has increased annually since the 1980s. In the US academic year 2018–2019, over 345,000 US students studied abroad, an increase of 1.6% over the previous academic year (Open Doors, 2021). Europe is the most common study abroad destination for US students (56%). Approximately 1.3 million international students studied abroad in the European Union in 2018 (Erasmus, 2019; Eurostat, 2016). Studying abroad in low or low-middle income countries has also increased (Open Doors, 2021). However, the COVID-19 pandemic severely impacted students' ability to study abroad due to international travel restrictions. In the 2019–2020 academic year, just over 160,000 US students studied abroad in comparison to the previous academic year (-53%), and more than 55,000 students returned to the United States prematurely due to the pandemic (Open Doors, 2021).

Students may travel to similar destinations as other travelers, but their risk of certain health-related events may be different (Angelo et al., 2020) (Angelin et al., 2015). Common health-related events encountered by students studying abroad include infectious diseases, psychological issues, and injuries, including traffic accidents (Angelin et al., 2015). Students may be at risk for infectious diseases acquired through risky behaviors (Angelo et al., 2020). US students studying abroad even can acquire tropical diseases, including malaria and dengue (Angelo et al., 2018). Students may also experience alcohol-related negative consequences, including legal issues and sexual assault (Aresi et al., 2016a, 2016b; Hummer et al., 2010; Pedersen, Larimer et al., 2010). Mental health issues may be triggered or unveiled, a finding that worsened during the COVID-19 pandemic (Fanari & Segrin, 2021).

Most studies of preparation practices and health-related events for students studying abroad involve small cohorts or students from a single country. Knowledge about availability of resources at institutions of higher

education (IHE) and health-related events encountered by students studying abroad is lacking. The purpose of this study was to characterize ways to improve the health of undergraduate students studying abroad by: 1) identifying gaps in IHE study abroad office health preparations; 2) understanding the role and practices of student health centers in study abroad preparation; and 3) identifying health-related events among students studying abroad.

Materials and Methods

IHEs with study abroad offices were recruited by the International Society of Travel Medicine's (ISTM) Student Travel Abroad Interest Group. Each participating IHE was responsible for questionnaire administration using standardized email templates. Anonymous web-based questionnaires were sent to three groups at participating IHEs from January 2018 to December 2021: 1) study abroad offices (Appendix A); 2) student health centers, if available (Appendix B); and 3) undergraduate students within two weeks of returning from studying abroad (Appendix C). Reminder emails were sent every other day for three attempts and once more at two weeks, or until the questionnaire was completed. All students were screened to ensure they did not meet the exclusion criteria and submitted a web-based informed consent. Students received a gift card for \$5 (USD) once they completed the questionnaire. Each IHE obtained IRB approvals in accordance with state and national regulations.

Exclusion Criteria

Students were excluded if they were less than 18 years of age at the time of the questionnaire or if they self-certified during screening that they could not accurately recount health-related events during their time studying abroad.

Data Management and Analysis

Data were collected and managed using REDCap electronic data capture tools at the US Centers for Disease Control and Prevention (CDC) and analyzed using Microsoft Excel and R v4.1.2 (Vienna, Austria). Demographic analyses were descriptive; relative risks (RR) and 95% confidence intervals (95% CI) were determined for pre-travel consultation characteristics in relation to a health-related event, student travel characteristics in relation to reporting a health-related event, and mental health diagnoses (including worsening) in relation to alcohol and drug use. Relative risk was calculated as the ratio of the probability of an event in the exposed group divided by the probability of the event in the unexposed group. The rate of infectious health-related conditions acquired by

students per week was calculated using the median number of weeks in each timeframe (*i.e.*, 28 weeks for 24–32 weeks) and the upper limit for >32 weeks (32 weeks). The chi-square test was performed for outcome variables and significance was defined as alpha <0.05.

Results

IHEs and Study Abroad Offices

Eight IHEs with study abroad offices were enrolled; seven IHEs were located in the United States and one in Ireland. Among the eight IHEs, six study abroad offices (86%) completed the study abroad office questionnaire. The most common travel destination was Western Europe, although the duration of study abroad programs, the primary program organizer, and the number of staff varied among offices (Table 1).

TABLE (1): CHARACTERISTICS OF IHE STUDY ABROAD PROGRAMS, 2018–2021 (*N* = 6)

Characteristics		<i>N</i>	%
Most common region (countries) of travel	Western Europe (Denmark, France, Germany, Italy, Spain, The Netherlands, United Kingdom)	6	100
Duration of study abroad programs (minimum and maximum)	<1 week through 9–12 months	1	17
	1–2 weeks through 9–12 months	2	33
	2–4 weeks through 6–9 months	1	17
	6–8 weeks through 9–12 months	1	17
	>12 weeks through 9–12 months	1	17
Primary program organizer(s) ^a	IHE sponsored programs	6	100
	Private agencies	3	50
	Other IHEs	2	33
Number of full-time staff	1–2	1	17
	3–4	1	17
	5 or more	4	67
Number of staff focusing on health-related issues	1–2	4	67
	None	2	33
Policies for a travel consultation with a healthcare professional	Required ^b	1	17
	Recommended or suggested ^c	3	50
	Neither	2	33
Required disclosure of students' health information before travel	Yes	4	67
	No	2	33
Staff accompany students abroad	Yes, always	1	17
	Sometimes ^d	2	33
	Never	3	50
Health professionals accompany students abroad	Yes	0	0
	Sometimes ^e	1	17
	No	5	83

Written policies for travel health insurance	Yes	6	100
	Required insurance	5	83
Required enrollment in STEP ^g	Yes	5	100
	Emergency contact information provided	6	100
IHE pre-travel education or training session required or mandated	Yes	5	83
	No	1	17
Additional health resources students are directed to for information ^a	US Department of State	5	83
	CDC webpages	4	67
	IHE student health website or printed materials	4	67
	CDC Yellow Book	3	50
	National Association of International Educators	2	33
	World Health Organization	2	33
	Other ^h	3	50

^aMore than one option could be chosen.

^bThe consultation was only required if the student was traveling to a high-risk destination. Students were sent to the student health center or other travel medicine specialist.

^cStudents were instructed to go to the student health center ($n = 3$), their primary care provider ($n = 3$), a travel medicine specialist ($n = 2$), or the health department ($n = 1$). One study abroad office only recommended a consultation if the student was traveling to a high-risk destination.

^dStaff only accompany students to short term programs run through the IHE.

^eQualified medical doctors accompany students to short term high-risk destinations.

^fOf the 5 study abroad offices that required or mandated travel insurance, one IHE supplied it free of charge to the student, 3 supplied it but the student needed to pay, 3 allowed students to obtain insurance directly from an insurance company, and one allowed them to change their existing policy to include international coverage. Of the 4 IHEs that supplied insurance, all included accident and illness, 24-hour emergency, medical evacuation, and repatriation coverage.

^gSTEP = US Department of State's Smart Traveler Enrollment Program; among 5 US-based IHEs

^hDepartment of Foreign Affairs, Safety Abroad First-Educational Travel Information Clearinghouse, and internal IHE materials

Of the six study abroad offices who responded, half reported that IHE staff always or sometimes accompany students on their trip. Only one (17%) study abroad office required a pre-travel consultation with a healthcare professional and only if the students were traveling to a destination that was considered high-risk by the study abroad office. Four (67%) offices required that students provide the program with health information before departure and five (83%) required travel health insurance. All six US study abroad offices in

the United States required enrollment in the US Department of State's Smart Traveler Enrollment Program (STEP). Five (83%) offices required attendance at a program sponsored pre-travel education session.

Student Health Centers

All seven student health centers who completed the questionnaire had pre-travel consultations available (Table 2).

TABLE (2): CHARACTERISTICS OF THE IHE STUDENT HEALTH CENTERS AND THE STUDENTS WHO ATTENDED A PRE-TRAVEL CONSULTATION, 2018–2021 ($N = 7$)

CHARACTERISTICS		N	%
Pre-travel counseling available	Yes	7	100
	No	0	0
Topics routinely covered at the pre-travel consultation ^a	Altitude illness	7	100
	Chemoprophylaxis for malaria	7	100
	Country-specific concerns (e.g., political unrest)	7	100
	Environmental hazards (e.g., heat and cold related conditions)	7	100
	Immunizations	7	100
	Personal safety (e.g., accidents, animals, extreme sports)	7	100
	Prevention of vector-borne diseases	7	100
	Rabies exposures	7	100
	Sexual health	7	100
	Travelers' diarrhea	7	100
	Mental health	6	86
	Other ^b	1	14
	Resources used to guide recommendations ^a	CDC Travelers' Health webpage	6
Health Information for International Travel (CDC Yellow Book)		6	86
US Department of State		5	71
International Society of Travel Medicine		4	57
Shoreland TRAVAX		4	57
World Health Organization		3	43
Up to Date (www.uptodate.com)		2	29
Other ^c		4	57
Stocks vaccinations	Yes	6	86
	No	1	14
Specific vaccination in stock ($n = 6$)			
Cholera	Yes	1	17
Hepatitis A	Yes	6	100
Hepatitis B	Yes	6	100
Herpes zoster	Yes	0	0
Influenza	Yes	6	100
Japanese encephalitis	Yes	5	83
Measles, mumps, rubella (MMR)	Yes	6	100
Meningococcal (polysaccharide or conjugate)	Yes	6	100

Pneumococcal (7, 13, or 23-valent)	Yes	3	50
Polio	Yes	6	100
Rabies	Yes	5	83
Tetanus, diphtheria, and/or pertussis (DT, Td, DTaP, Tdap)	Yes	6	100
Tick-borne encephalitis	Yes	0	0
Typhoid (oral live attenuated)	Yes	6	100
Typhoid (Vi capsular)	Yes	5	83
Varicella	Yes	6	100
Yellow fever	Yes	5	83
Able to prescribe travel-related medications (e.g., malaria chemoprophylaxis, acetazolamide, antibiotics)	Yes	7	100
Post-travel services available	Yes	7	100
Number of students seen for post-travel healthcare services the previous academic year ^d	1–20	4	80
	None	1	20

^aMore than one option could be chosen.

^bIndications for healthcare follow-up after travel, how to find medical care while abroad, and how to pack a first aid kit.

^cAmerican Travel Nurses Association, National Travel Health Network and Centre, State/local public health department, TravelCare,

^dCommon reasons to seek post-travel services included infestations, jet lag, lacerations, skin issues/rashes, and travelers' diarrhea.

Although many travel medicine issues were routinely addressed at visits, mental health counseling was not included at six (88%) student health centers. All but one student health center kept vaccines in stock; five (71%) had travel-specific vaccines (e.g., yellow fever) available. All student health centers were able to prescribe travel-related medications and conduct post-travel evaluations.

Students

In total, 686 students completed the questionnaire (Table 3).

TABLE (3): CHARACTERISTICS OF THE STUDENTS WHO STUDIED ABROAD, THEIR TRIP INFORMATION, AND PRE-TRAVEL PREPARATION PRACTICES, 2018–2021 (*N* = 686)

Characteristics		n	%
Students			
Age, in years (during the study abroad experience)	<18	1	<1
	18–19	166	24
	20–21	459	67
	22–23	42	6
	>23	17	2
	Would rather not answer	1	<1
Gender identity	Woman	529	77
	Man	147	21
	Both/Neither/Fluid	5	1

	Don't know	1	<1
	Would rather not answer	4	1
Transgender	Yes	4	1
	No	676	99
	Don't know	4	1
	Would rather not answer	2	<1
Year of school	Year 1 (freshman)	42	6
	Year 2 (sophomore)	112	16
	Year 3 (junior)	366	53
	Year 4 (senior)	144	21
	Other (year 5+)	21	3
	Don't know	1	<1
Race	White	482	70
	Asian	128	19
	Other ^a	40	6
	Don't know	7	1
	Would rather not answer	29	4
Ethnicity	Non-Hispanic	599	87
	Hispanic	61	9
	Don't know	11	2
	Would rather not answer	15	2
Country of IHE enrollment	United States	646	94
	Ireland ^b	40	6
Study abroad trip information			
Academic year of travel	2018–2019	542	79
	2019–2020	119	17
	2020–2021	25	4
Top 20 countries of travel ^{c, d}	Spain	91	12
	United Kingdom	89	12
	Italy	66	9
	France	63	8
	Germany	45	6
	Ireland	29	4
	China	22	3
	Japan	21	3
	Australia	19	2
	South Africa	19	2
	Sweden	18	2
	Netherlands	17	2
	Argentina	16	2
	South Korea	16	2
	Austria	15	2
	Costa Rica	13	2
	Greece	13	2
	India	13	2
	United States of America	13	2
		Slovenia	12
Setting (<i>n</i> = 675)	Urban	554	82
	Rural	41	6

	Urban and rural	80	12
Purpose	Study / academic coursework	615	90
	Internship	35	5
	Research	20	3
	Conferences or presentations	4	1
	Service	2	<1
	Other (multiple or unspecified)	7	1
	Don't know	1	<1
	Would rather not answer	2	<1
Duration, in weeks ^e	<4	170	25
	4–8	196	29
	>8–12	128	19
	>12–24	159	23
	>24–32	14	2
	>32	19	3
Residence	Dormitory or other student housing	283	41
	Home stay with non-relatives	160	23
	Hotel	137	20
	Hostel	36	5
	Home stay with relatives	5	1
	Other ^f	65	10
Program coordination (<i>n</i> = 685)	Own IHE	561	82
	External private agency	70	10
	Other IHE	28	4
	University-related organization	13	2
	Other ^g	2	<1
	Don't know	9	1
	Would rather not answer	2	<1
IHE staff accompanied students	Yes ^h	375	55
	No	295	43
	Don't know	16	2
Median number of countries traveled to — study abroad destinations plus other trips (range)		2 (1–20)	
Pre-travel preparation practices			
Attended a pre-travel consultation	Yes	251	37
	No	419	61
	Don't know	13	2
	Would rather not answer	3	<1
Healthcare professional seen for the pre-travel consultation (<i>n</i> = 251)	Student health center	109	43
	Primary care provider	105	42
	Travel medicine specialist	23	9
	Health department	2	1
	Other ⁱ	9	4
	Don't know	3	1
Timeframe before trip when attended the pre-travel consultation (weeks) (<i>n</i> = 251)	<1	14	6
	1–4	139	55
	>4	85	34
	Don't know	12	5
	Would rather not answer	1	<1

IHE mandated travel health insurance	Yes	614	90
	No	25	4
	Don't know	46	7
	Would rather not answer	1	<1
Attended IHE education or training session	Yes	589	86
	No	87	13
	Don't know	9	1
	Would rather not answer	1	<1
Registered with STEP (US students only; <i>n</i> = 685)	Yes	468	73
	No	114	18
	Don't know	57	9
	Would rather not answer	6	1
Where obtained health-related information ^d	Study abroad office staff	355	52
	Consultation with healthcare professional	187	27
	CDC Travelers' Health webpage (including Yellow Book)	185	27
	Advice from peers	160	23
	IHE health center	158	23
	IHE student health website	151	22
	US Department of State	111	16
	World Health Organization	31	5
	Other ^j	28	4
	None of the above	52	8
	Don't know	42	6
Would rather not answer	1	<1	

^aBlack or African American (34; 5%), Native American or American Indian (4; 1%), Native Hawaiian or other Pacific Islander (2; 0%).

^bSix students studied abroad only in the United States.

^cTotal number of study abroad country experiences is 777; students may have studied in more than one country.

^dMore than one option could be chosen.

^eMost students (671; 98%) stayed the full duration as planned; 1% did not stay the full duration and 1% didn't know or would rather not answer.

^fPrivate apartment (*n* = 51), Airbnb (*n* = 7), camping (*n* = 2), other on-site accommodation (*n* = 1).

^gFederal program or scholarship (*n* = 1), other partner program (*n* = 1).

^hStaff was used by 144 (38%) students as a resource for health-related questions; they were unable to assist 7 (5%) students.

ⁱPsychiatrist or therapist (*n* = 6), urgent care (*n* = 2), parents who are doctors (*n* = 1).

^jFamily (*n* = 4), internet (*n* = 2), external study abroad staff (*n* = 2), handbooks (*n* = 1), counselor (*n* = 1).

Students were most frequently between 20–21 years of age (67%), female (77%), in their third year of university (junior) (53%), white (70%), and non-

Hispanic (87%). Students most frequently reported studying abroad in Western Europe (65%). Of 40 students enrolled at an IHE in Ireland, six (15%) traveled only to the United States; there were no statistical differences in demographics or outcomes between these students and students enrolled at an IHE in Ireland who traveled elsewhere or students enrolled at an IHE in the United States. The most frequent study abroad duration was four to eight weeks (29%). Trip durations less than eight weeks were associated with decreased risk of acquiring an infectious health condition, however, the rate of infections per week was lower for students who traveled for longer durations (Table 4).

TABLE (4): ASSOCIATION OF LENGTH OF STUDY ABROAD DURATION ON STUDENTS ACQUIRING AN INFECTIOUS HEALTH CONDITION WHILE STUDYING ABROAD, 2018–2021

Length of study abroad	Infectious conditions	Students	RR (95% CI)	p-value	Number of infections per week (per 100 students)
<4 weeks	34	170	0.45 (0.31–0.64)	<0.001	10
4–8 weeks	60	196	0.69 (0.52–0.92)	0.01	5
>8–12 weeks	57	128	Reference*	Reference*	4
>12–24 weeks	77	159	1.09 (0.85–1.40)	0.51	2
>24–32 weeks	7	14	1.12 (0.64–1.96)	0.70	2
>32 weeks	14	19	1.65 (1.19–2.30)	0.02	2

RR= relative risk; 95% CI = 95% confidence interval

*Reference denotes the group used as the comparator for all calculations.

Students reported travel to additional countries apart from their program of study country while abroad (median: two countries; range 1–20); 20 students traveled to 10 or more countries. Most students (61%) did not attend a pre-travel consultation with a healthcare professional. Of the 251 students who attended a pre-travel consultation, 43% went to their student health center and 55% did so one to four weeks before departure. Seeing a healthcare professional at any time before travel was not associated with a lower risk of experiencing a health-related event (RR 1.1; 95% CI 0.98–1.18). However, among students who saw a healthcare professional before departure, those who did in the four weeks before departure had a decreased risk of having a health-related event (RR 0.76; 95% CI 0.67–0.86; $p < 0.001$). Students who traveled to the United States or Western Europe were less likely to attend a pre-travel consultation than those who traveled to other countries (RR: 0.47; 95% CI: 0.38–0.59; $p < 0.001$). Only 73% of US students registered with STEP. Pre-travel health-related information was reported to be obtained from study abroad office staff (24%), healthcare professionals (13%), and peers (11%).

Of 1,895 health-related issues reported by students while abroad, 307 (16%) were infectious diseases and 1,588 (84%) were non-infectious health issues (Table 5).

TABLE (5): INFECTIOUS ($N = 307$) AND NON-INFECTIOUS ($N = 1,588$) HEALTH-RELATED EVENTS REPORTED BY STUDENTS STUDYING ABROAD, 2018–2021 ($N = 686$)

Condition	n	% of all students	Duration of illness in days, median (range)	Had a pre-travel consultation with a healthcare professional, n (%)	
Infectious	Common cold	166	24	5 (1–60)	64 (39)
	Travelers' diarrhea	53	8	3 (1–60)	32 (60)
	Food poisoning	46	7	2 (1–14)	22 (48)
	Fungal infection	20	3	Not provided	9 (45)
	Influenza	8	1	4.5 (4–14)	0 (0)
	Gastroenteritis or colitis	4	1	2.5 (1–5)	3 (75)
	Other skin disease ^a	3	<1	7 (3–40)	1 (33)
	Rickettsioses ^b	2	<1	7	1 (50)
	Hepatitis A	1	<1	Not provided	0 (0)
	Pinworm	1	<1	30	0 (0)
	<i>Chlamydia</i>	1	<1	4	0 (0)
	Mononucleosis	1	<1	25	1 (100)
	Scabies	1	<1	30	1 (100)
	Non-infectious	Jet lag	349	51	
Insect bite/sting		262	38		107 (41)
Anxiety, generalized		187	27		68 (36)
Stress		183	27		64 (35)
Depression		124	18		53 (43)
Motion sickness		121	18		54 (45)
Panic/severe anxiety		78	11		25 (32)
Fall		40	6		11 (28)
Heat exhaustion		38	6		18 (47)
Altitude sickness		24	4		15 (63)

Hives	24	4	10 (42)
Edema/swelling	21	3	12 (57)
Air pollution/asthma	20	3	8 (40)
Post-traumatic stress disorder	18	3	6 (33)
Other accidents ^c	15	2	4 (27)
Marine sting	12	2	7 (58)
Other crimes ^d	12	2	5 (42)
Other mental health ^e	12	2	6 (50)
Violent crime ^f	11	2	5 (46)
Other environmental hazard ^g	11	2	5 (46)
Heat stroke	6	1	2 (33)
Vehicle accident	5	1	2 (40)
Dog/cat bite	3	<1	0 (0)
Monkey bite	2	<1	2 (100)
Other bite/sting ^h	2	<1	1 (50)
Bipolar disorder	2	<1	2 (100)
Psychosis	2	<1	2 (100)
Pedestrian accident	1	<1	1 (100)
Frostbite	1	<1	1 (100)
Water accident	1	<1	1 (100)
Anaphylaxis	1	<1	0 (0)

^aBedbug bites ($n = 1$), eczema ($n = 1$), piercing ($n = 1$)

^bAcquired in Thailand ($n = 1$) and Australia ($n = 1$)

^cSkin injury from minor trauma ($n = 6$); sprain, strain or dislocation ($n = 4$); closed head injury ($n = 2$); sports-related injury ($n = 2$); ear injury ($n = 1$)

^dRobbery, theft, or pickpocketing ($n = 12$)

^eObsessive compulsive disorder ($n = 4$), attention deficit hyperactivity disorder ($n = 3$), eating disorder ($n = 2$), seasonal affective disorder ($n = 1$), borderline personality disorder ($n = 1$), other ($n = 1$)

^fMugging ($n = 7$), sexual assault ($n = 3$), physical assault ($n = 1$)

^gSmoke inhalation ($n = 5$), dust or allergies ($n = 4$), skin issues ($n = 2$)

^hBedbug ($n = 1$), spider ($n = 1$)

The most frequently reported infectious health conditions were the common cold (24%), travelers' diarrhea (8%), and food poisoning (7%). No students reported acquiring COVID-19. The most frequently reported non-

infectious health issues were jet lag (51%), insect bite or sting (38%), and generalized anxiety (27%). Three students (<1%) were victims of sexual assault. Twelve students (2%) were hospitalized while abroad, most frequently for travelers' diarrhea ($n = 4$) or an accident or injury ($n = 3$) (Table 6).

TABLE (6): HEALTH-RELATED EVENTS LEADING TO HOSPITALIZATIONS, INCLUDING LOCATION AND PRE-TRAVEL CONSULTATION STATUS, 2018–2021 ($N = 12$)

Health-related event	n ^a	Location	Had a pre-travel consultation with a healthcare professional, n (%)
Travelers' diarrhea	4	Chiang Mai, Thailand Sydney, Australia Taipei, Taiwan Barcelona, Spain	3 (75)
Fall	3	Oxford, England ($n = 2$) Bordeaux, France ($n = 1$)	0 (0)
Other accident/injury	2	Heredia, Costa Rica Graz, Austria ^b	0 (0)
Rickettsiosis	1	Chiang Mai, Thailand	1 (100)
Food poisoning	1	Chiang Mai, Thailand	1 (100)
Scabies	1	Santa Barbara, United States	1 (100)
Monkey bite	1	Hong Kong	1 (100)
Violent crime	1	London, England	0 (0)

^aOne student was hospitalized with three conditions (travelers' diarrhea, rickettsiosis, food poisoning).

^bSkiing-related injury, glass injury

Mental health conditions such as generalized anxiety, stress, and depression were frequently reported (see Table 7 on the following page).

TABLE (7): MENTAL HEALTH CONDITION CHARACTERISTICS AND THE ASSOCIATION OF MENTAL HEALTH CONDITIONS WITH ALCOHOL AND DRUG USE AMONG STUDENTS ABOARD, 2018–2021

Mental health condition	Med taken for condition, n (%)	Hospitalized before study abroad, n (%)	Condition worse while abroad, n (%)	Received adequate IHE support before, during, or after study abroad, n (%)	Used alcohol, n (%)	RR (95% CI)	p-value	Used drugs, n (%)	RR (95% CI)	p-value
Anxiety, generalized (<i>n</i> = 187)	62 (33)	10 (5)	47 (25)	86 (46)	167 (89)	1.08 (1.02–1.16)	0.03	47 (25)	1.58 (1.15–2.18)	0.01
Bipolar disorder (<i>n</i> = 2)	2 (100)	2 (100)	1 (50)	0 (0)	2 (100)	N/A	N/A	1 (50)	2.76 (0.68–11.15)	0.80
Depression (<i>n</i> = 124)	58 (47)	16 (13)	27 (22)	77 (62)	105 (85)	1.00 (0.92–1.09)	0.91	35 (28)	1.75 (1.25–2.47)	0.02
Panic attacks/severe anxiety (<i>n</i> = 78)	20 (26)	9 (12)	18 (23)	34 (44)	69 (89)	1.05 (0.96–1.15)	0.31	21 (27)	1.59 (1.06–2.38)	0.03
Post-traumatic stress disorder (<i>n</i> = 18)	1 (6)	1 (6)	1 (6)	6 (33)	16 (89)	1.06 (0.89–1.25)	0.84	9 (50)	2.87 (1.76–4.69)	0.001
Psychosis (<i>n</i> = 2)	1 (50.0)	2 (100)	0 (0)	0 (0)	2 (100)	N/A	N/A	1 (50)	2.75 (0.68–11.15)	0.80
Stress (<i>n</i> = 183)	25 (14)	5 (3)	45 (25)	89 (49)	163 (89)	1.07 (1.00–1.14)	0.06	50 (27)	1.81 (1.15–2.18)	<0.001
Other ^a (<i>n</i> = 12)	5 (42)	3 (25)	2 (17)	4 (33)	11 (92)	1.09 (0.91–1.29)	0.78	4 (33)	1.86 (0.82–4.20)	0.32

RR= relative risk; 95% CI = 95% confidence interval; N/A = not applicable

^aObsessive compulsive disorder (*n* = 4), attention deficit hyperactivity disorder (*n* = 3), eating disorder (*n* = 2), seasonal affective disorder (*n* = 1), borderline personality disorder (*n* = 1), other (*n* = 1)

The most common mental health conditions that worsened during the study abroad period included bipolar disorder (50%), generalized anxiety (25%), stress (25%), panic attacks/severe anxiety (23%), and depression (22%).

Students with generalized anxiety reported more alcohol consumption than students without generalized anxiety (RR 1.08; 95% CI 1.02–1.16). There was no increased risk of alcohol use among students whose mental health conditions worsened while abroad compared to those whose mental health conditions were the same or better. Eighty-four percent of students ($n = 578$) reported consuming alcohol while abroad. Among 567 responses, 279 (49%) reported they drank more alcohol than usual. Among 569 responses, students most frequently drank one to five drinks (332; 58%) or 6 to 10 drinks (132; 23%) per week; 4 (1%) drank more than 30 drinks per week. Over one-third binge drank (217; 38%).

Students with generalized anxiety (RR 1.58; 95% CI 1.15–2.18), depression (RR 1.75; 95% CI 1.25–1.47), panic disorder (RR 1.59; 95% CI 1.06–2.38), post-traumatic stress disorder (RR 2.87; 95% CI 1.76–4.69), and stress (RR 1.81; 95% CI 1.32–2.49) were more likely to use illicit or recreational drugs while abroad than students who did not report each of those conditions. Students whose generalized anxiety worsened while abroad more often used recreational drugs (RR 1.86; 95% CI 1.14–3.04) than those who reported their generalized anxiety was the same or better. Illicit or recreational drugs used included marijuana (115; 17%), hashish (13; 2%), mushrooms (12; 2%), and ecstasy (11; 2%). Most students (440; 64%) reported not taking illicit or recreational drugs while abroad.

Of 673 students who responded to questions about sexual activity, 112 (17%) reported having a new sexual partner while abroad. Of 211 students who engaged in risky sexual behaviors (sexual encounters with strangers, having sex in exchange for money or drugs, or not using barrier protection to prevent pregnancy and sexually transmitted infections); 92 (44%) engaged in the same number of risky behaviors as they would when not studying abroad, 90 (43%) engaged in fewer, and 29 (14%) engaged in more. One student reported acquiring an STI (*Chlamydia*).

Discussion

Our study is the largest to date that assessed health-related events among students studying abroad and the preparatory practices at their IHEs. These findings emphasize the need for integrated pre-travel coordination between the

study abroad office, student health center, and the students themselves to optimize health during the study abroad experience.

Based on prior reports, between 18–70% of students studying abroad attend a pre-travel consultation, depending on presumed destination risks (Angelo et al., 2018; Hartjes et al., 2009). All IHEs in this study had pre-travel counseling available at the student health centers and had vaccines in-stock, but not all study abroad offices collaborated with their health center to provide a pre-travel consultation for students before departure. Students may be unaware that travel health services can be provided (Neave et al., 2017) and may instead obtain their pre-travel information from youth-oriented travel books or peers (Hartjes et al., 2009). In our study, only one IHE required a pre-travel consultation and only if the student was traveling to a high-risk destination. Given that most students studied abroad in Western Europe, often perceived as a low-risk region, it is no surprise that many students did not seek pre-travel care. Conditions preventable with vaccination (mumps, varicella) and medication-preventable conditions (e.g., motion sickness, altitude illness) were reported, which may have been mitigated through vaccination or medications provided at a pre-travel consultation. Closing the loop between the study abroad office and the student health center is important to improve preparedness and mitigate risk, especially for students who are not up to date with current vaccines or would like more information on preventive practices (American College Health Foundation [ACHF], 2022). Also, risks at the students' primary destination are not the only concern, given that almost 65% of students traveled to a country other than the one where they studied, over 50% traveled to 2–3 additional countries, and 20 students traveled to 10 or more countries. If plans are not known, the student should be provided with resources for advice while abroad (e.g., contact information for travel clinics at their study abroad destination, web-based resources to check for health concerns at a destination) to prevent illness (Flaherty & Md Nor, 2016). Although this study did not demonstrate a decreased risk of having a health-related event after having a pre-travel consultation, it is important to note this finding is likely influenced by confounding factors we are unable to account for with the data collected (e.g., individual risk perception, the high frequency of unavoidable or expected events like jet lag or stress, etc.).

CDC recommends that travelers attend a pre-travel consultation at least one month before departing for all destinations (Chen & Hochburg, 2020). This

recommendation is based on timing to complete vaccination schedules for travel-related diseases, but the findings in this study suggest that being seen by a healthcare professional less than 4 weeks before traveling decreased the risk of health-related events compared with being seen more than 4 weeks before traveling. This suggests that the closer to departure date that health-related information is provided, the more likely students will follow the advice. Additional studies are needed to explain if this finding is specific to students studying abroad or if all travelers would benefit from pre-travel consultations closer to their departure.

Baseline mental health issues were high, indicating that these conditions are prevalent and may be underreported (University of Minnesota, 2019); among students with a mental health diagnosis prior to departure, few reported that they received adequate support from their IHE and not all health centers routinely performed mental health counseling during pre-travel consultations. Despite students being more willing in recent years to discuss their mental health conditions (UCAS, 2021; University of Minnesota [UMN], 2019), reporting illness contributes to stigma and worry (Education Policy Institute, 2018; UCAS, 2021; UMN, 2019) that they may not be accepted into the program. Surveys suggest approximately half of students with a condition may not report it (Pedersen, LaBrie et al., 2020), adding difficulty in adequately preparing students with mental health needs (Education Policy Institute, 2018; Lucas, 2009). IHEs play a central role in this preparation — students should be encouraged to disclose mental health conditions, and this should be confidential unless the student is a risk to themselves or others, and not be used to make an academic judgment (ACHF, 2022; United Educators, 2020). Study abroad offices must remember that study abroad can be uplifting for students with mental health issues and early intervention could help to alleviate possible mental health crises while abroad. Developing mental health strategic plans and written policies (Li et al., 2020) and assisting students to develop a crisis plan with emergency mental health resources at the destination by the study abroad office or student health center can be beneficial. IHEs can focus on developing IHE infrastructure to address mental health needs, including health consultation coordination before, during, and after travel, ensuring IHE wellness resources are promoted and easily accessible, and focusing on fostering empathy instead of stigma (Lucas, 2009; United Educators, 2020; UMN, 2019). Post-travel debriefings and mental health checks can be considered after

return to ensure students are adequately supplied with resources upon reintegration (ACHF, 2022). In the event of a mental health crisis while abroad, repatriation insurance must cover mental health issues. The increased risk of alcohol and illicit drug use among students with various mental health conditions suggests substance use as a coping or treatment mechanism (Colder et al., 2019; Li et al., 2020). Marijuana use in college students has been linked to depression (Buckner et al., 2007), yet it is unclear if marijuana use worsens depression (Li et al., 2020) or if depression predisposes to increased use (Colder et al., 2019). More studies are needed to address the impact of mental health conditions on coping behaviors (and vice versa) while abroad and how to best prepare students with mental health conditions to safeguard their health during their study abroad experience.

This study also demonstrates the importance of trip duration in determining the risk of acquiring an infectious health condition. Although students studying abroad for longer durations were more likely to report an infectious disease health condition at some point during their experience, the weekly risk of acquiring a condition decreased with increasing study abroad durations, indicating an attenuating risk in the ensuing months after arrival. This finding is novel in the travel medicine literature; studies have shown that long-term travelers such as expatriates are likely to become ill with infectious diseases (Kitro et al., 2022), but no study to date has quantified the change in risk with travel duration. The higher rate of infectious conditions despite overall decreased risk for shorter term (<8 weeks) travelers may be explained by early exposure to pathogens in a new environment. Health-related reminders from the IHE (*i.e.*, emails to remind about personal protective measures) to students traveling for more than 8 weeks may help mitigate some risk, but in certain circumstances (*i.e.*, travel to high-risk destinations) consideration may be given to having IHE staff accompany students to serve as a resource for mitigating health-related events. Students in this study who had staff accompany them on trips reported this person was able to assist them with navigating their health-related issues in most circumstances. Study abroad offices could also consider providing communication plans to the students to prepare for emergencies and ensuring overseas institutions or program staff have accessible medical resources.

This study revealed findings inconsistent with the current literature about sexual health while studying abroad. There were few reports of sexual

assault in this study, although this may occur in up to one-fifth of US students studying abroad (Pedersen et al., 2021). Only one student reported an STI, which is surprising given the link between alcohol use, sexual encounters, and STIs while abroad (Aresi et al., 2019; Hummer et al., 2010). Sexual health may not be commonly discussed at pre-travel consultations but is an opportunity to provide sexual health education (*e.g.*, condom or long-acting reversible contraception use, STIs) and post-travel STI screening.

Alcohol drinking behaviors identified in this study also differed from the literature. Most students used alcohol while abroad in our study, but their alcohol consumption behaviors were infrequently associated with increased use (more than half drank less or the same amount of alcohol as usual), binge drinking, presence of mental health conditions (except for students with generalized anxiety) or worsening of mental health conditions. In contrast, other studies reported that students studying abroad may engage more often in harmful drinking behaviors during study abroad trips (Aresi et al., 2016a, 2016b, 2019; Hummer et al., 2010; Mitchell et al., 2016; Pedersen, LaBrie et al., 2010; Pedersen, Larimer et al., 2010), with up to 63% of students studying abroad binge drinking (Mitchell et al., 2016). Heavy alcohol consumption has been associated with alcohol-related consequences in some studies, including injuries, crime, unprotected sex (Hummer et al., 2010), or sexual assault (Flack et al., 2014). However, it has not been associated with increased risk taking and negative consequences in others (Aresi et al., 2016a). Several factors have been documented to possibly contribute to excess alcohol consumption, including demographics (younger white males) (Pederson, Larimer et al., 2010) (Pederson, LaBrie et al., 2010), intention to drink before departing (Pedersen, LaBrie et al., 2010), location (students studying abroad in Europe have the largest increases) (Pederson, LaBrie et al., 2010; Pederson, Larimer et al., 2010), level of acculturation (students with lower acculturation drank more heavily) (Aresi et al., 2016a), and differences in legal drinking ages in comparison to the home country. Lower alcohol use has been associated with greater acculturation and higher host country living cost (Aresi et al., 2019), which may explain the findings in this study. Given the discrepancies in the literature regarding sexual health and substance use among students studying abroad, more studies are needed to determine the specific factors and circumstances impacting engagement in these behaviors.

This analysis has some limitations. IHE enrollment was subject to selection bias because recruitment was performed through ISTM student health contacts, resulting in most enrolled IHEs having an accessible student health center. Despite the confidential nature of responses, reporting bias may occur, particularly regarding sensitive topics (*e.g.*, sexual health, illicit substance use). Also, health-related conditions were based upon self-report. This study focused on undergraduate students only, so findings are not generalizable to all student travelers studying abroad (*e.g.*, graduate students). Also, the COVID-19 pandemic disrupted data collection due to the dramatic decline in students studying abroad (only 26 students completed the questionnaire from March 2020 through December 2021), and also limited the number of recruited IHEs that completed their internal review board documentation to participate in the study. Therefore, the seven US IHEs that were enrolled represent only a small percentage of IHEs and are not intended to encompass all study abroad offices, programs, or student experiences. We were unable to access the number of students that were sent the questionnaire by each study abroad office, thus student response rates could not be calculated.

Conclusions

Summarized from the findings in this study, the recommendations listed below are for IHE study abroad offices and may help to optimize health preparations for students studying abroad:

- Increase collaboration between study abroad offices and student health centers,
- Promote pre-travel consultations,
- Encourage the confidential disclosure of mental health conditions,
- Provide mental health resources for students,
- Discuss sexual health and substance use (alcohol, illicit drugs); and
- Offer post-travel health assessments (including a mental health check).

IHEs in this study might benefit from coordination between the study abroad office and student health center, including promoting pre-travel consultations. Further large prospective cohort studies are warranted to address the optimal timing and best practices for health-related issue prevention for students abroad. Healthcare professionals and public health officials may use the findings from this and future studies to enhance or change recommendations for students studying abroad and develop formal guidelines for IHE study abroad offices regarding student travel health best practices.

Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention. The authors report there are no competing interests to declare.

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Data Availability

These data are of each individual institution, and access to these data requires contacting the respective institution for permission.

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Anjali Silva, MD, is an internal medicine physician affiliated with the University of Virginia Medical Center (USA). She worked in the University of Virginia student health center, working to provide medical, mental health, and accessibility services to students. She is a member of the International Society of Travel Medicine.

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Gerard T. Flaherty, MD, PhD, gained Membership of the Royal College of Physicians of Ireland in 2002 and Fellowship in 2011. He holds a Diploma in Travel Medicine from Glasgow. He has completed three Masters degrees, including a Masters in International and Travel Health and Masters in Medical Education. He is the current president of the International Society of Travel Medicine. His research interests include travel health behavior and mental health issues and travel.

Gary Brunette, MD, is a preventive medicine physician and medical epidemiologist who served as branch chief for the US Centers for Disease Control and Prevention's Travelers' Health Branch. He was the Editor-in-Chief of the CDC Yellow Book until 2019. He is now the lead of the Future Leaders in Infections and Global Health Threats (FLIGHT) program at CDC which aims to prepare participants to address global public health threats. He is also a Captain in the US Public Health Service.

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Authors Contributions

KMA, KC, JR, AS, CE, GTF, GB, SK conceived the study; KMA, JR, AS, CE, GTF, SK designed the study protocol; JR, AS, CE, GTF, SK performed data collection; KMA, KC analyzed the data; KMA, KC, JR, AS, CE, GTF, GB, SK interpreted the data; KMA wrote the first draft of the manuscript; KC, JR, AS, CE, GTF, GB, SK critically revised the manuscript for intellectual content. All authors read and approved the final manuscript.

Appendix A: College/University Study Abroad Office Questionnaire

Date (MM/DD/YY) _____

The International Society of Travel Medicine (ISTM) is conducting a survey of college and university undergraduate study abroad offices, their undergraduate students who study abroad, and the student health centers. This survey involves anonymous web-based questionnaire to identify gaps in preparedness, knowledge specific to this group of travelers, and health-related events encountered while abroad. With your help, we hope to improve the pre-travel preparation for students studying abroad and increase student's awareness of specific risks they may encounter while studying abroad.

Participation in this questionnaire is voluntary, and it will only take a moment of your time.

Please note that some of this information will require you to have demographic data on the students (e.g., reason for study abroad, duration of travel, year of schooling, age, sex, race, ethnicity, and location of travel). Please generate any necessary reports prior to starting the questionnaire.

Screening for eligibility:

Is your student study abroad office willing to complete an anonymous web-based questionnaire?

Yes*

No

Don't know

**If yes, the study abroad staff are eligible to continue with the questionnaire.*

Informed Consent:

[INSERT INFORMED CONSENT: APPENDIX E]

If the informed consent is acknowledged electronically, the study abroad office staff will be directed to continue with the web-based questionnaire.

Beginning of the Questionnaire

College/University Study Abroad Office Specifics

All of the following questions are specific to your college or university.

1. **Name of the college/university:** _____
 - a. City: _____
 - b. State: _____
 - c. Country: _____

2. **Is the college/university public or private?**
 - a. Public
 - b. Private
 - c. Other (*Please specify*) _____
 - d. Don't know

3. **Is the college/university co-ed?**
 - a. Yes
 - b. No
 - c. Other (*Please specify*) _____
 - d. Don't know

4. **What is your role in the study abroad office?**
 - a. Director
 - b. Advisor
 - c. Chancellor
 - d. Vice chancellor
 - e. President
 - f. Vice president
 - g. Administrative coordinator
 - h. Program assistant
 - i. Medical professional
 - j. Other (*Please specify*) _____
 - k. I would rather not answer

5. **What is the size of the full-time undergraduate student body?**
 - a. < 1,000 students
 - b. 1,000 to 5,000 students
 - c. 5,001 to 10,000 students
 - d. > 10,000 students
 - e. Don't know
 - f. I would rather not answer

6. **What percent of the undergraduate students at your college/university study abroad at some point before graduation?**

- a. 1% to 5%
- b. 6% to 10%
- c. 11% to 15%
- d. 16% to 20%
- e. 21% to 25%
- f. 26% to 30%
- g. 31% to 35%
- h. 35% to 40%
- i. 41% to 45%
- j. 46% to 50%
- k. > 50%
- l. Don't know
- m. I would rather not answer

7. **For the purposes of this study, we focus some questions on the “previous academic year.” This is defined as the 12 month period between the start of university/college courses through the end of college/university courses in which an entire 12 months of data are available. (i.e., in the United States, from the beginning of the fall semester through the end of the summer courses).**

Please note of the MONTH of the START of the “previous academic year as it applies to your institution. _____

Please note of the YEAR of the START of the “previous academic year as it applies to your institution. _____

Please note of the MONTH of the END of the “previous academic year as it applies to your institution. _____

Please note of the YEAR of the END of the “previous academic year as it applies to your institution. _____

How many undergraduate students participated in your study abroad office programs during the previous academic year? Do NOT include students who studied abroad, but were not tracked through your study abroad office. The "previous academic year" is the 12 month period between the start college/university courses through the end of college/university courses in which an entire 12 months of data is available (i.e., in the United States, from the beginning of fall semester through the end of summer courses).

- a. < 5 students
- b. 5 to 20 students
- c. 21 to 50 students
- d. 51 to 80 students
- e. 81 to 110 students
- f. 111 to 200 students
- g. 201 to 500 students
- h. 501 to 1,000 students

- i. 1,001 to 5,000 students
- j. > 5,000 students
- k. Don't know
- l. I would rather not answer

8. Which of the following purposes of undergraduate student study abroad travel are supported by your college/university? Check all that apply.

- a. Study / academic coursework
- b. Research
- c. Internship
- d. Service
- e. Conferences or presentations
- f. Recruiting
- g. Athletic competitions
- h. Other (*Please specify*) _____
- i. Don't know
- j. I would rather not answer

9. What was the *shortest* study abroad duration for undergraduate students who participated in your study abroad office programs during the previous academic year? Do NOT include students who studied abroad, but were not tracked through your study abroad office. The "previous academic year" is the 12 month period between the start college/university courses through the end of college/university courses in which an entire 12 months of data is available (*i.e.*, in the United States, from the beginning of fall semester through the end of summer courses).

The study abroad duration is the total time spent fulfilling the purpose of study abroad travel in-country.

- a. 1 week or less
- b. 1 to 2 weeks
- c. 2 to 4 weeks
- d. 4 to 6 weeks
- e. 6 to 8 weeks
- f. 8 to 10 weeks
- g. 10 to 12 weeks
- h. > 12 weeks
- i. Don't know
- j. I would rather not answer

10. What was the *longest* study abroad duration for undergraduate students who participated in your study abroad office programs during the previous academic year? Do NOT include students who studied abroad, but were not tracked through your study abroad office. The "previous academic year" is the 12 month period between the start college/university courses through the end of college/university courses in which an entire 12 months of data is available (*i.e.*, in the United States, from the beginning of fall semester through the end of summer courses).

The study abroad duration is the total time spent fulfilling the purpose of study abroad travel in-country.

- a. < 1 month

- b. 1 to 3 months
- c. 3 to 6 months
- d. 6 to 9 months
- e. 9 to 12 months
- f. > 1 year
- g. Don't know
- h. I would rather not answer

11. What was the *most common* study abroad duration for undergraduate students who participated in your study abroad office programs during the previous academic year? Do NOT include students who studied abroad, but were not tracked through your study abroad office. The "previous academic year" is the 12 month period between the start college/university courses through the end of college/university courses in which an entire 12 months of data is available (*i.e.*, in the United States, from the beginning of fall semester through the end of summer courses).

The study abroad duration is the total time spent fulfilling the purpose of study abroad travel in-country.

- a. 1 to 4 weeks
- b. 4 to 8 weeks (*i.e.*, summer or winter session)
- c. 8 weeks to 12 weeks (*i.e.*, quarter session)
- d. 12 weeks to 24 weeks (*i.e.*, semester session)
- e. 24 weeks to 32 weeks (*i.e.*, extended semester or two quarter sessions)
- f. > 32 weeks (*i.e.*, academic or calendar year)
- g. Don't know
- h. I would rather not answer

12. What year of schooling was the most common for undergraduate students who participated in your study abroad office programs during the previous academic year? Do NOT include students who studied abroad, but were not tracked through your study abroad office. The "previous academic year" is the 12 month period between the start college/university courses through the end of college/university courses in which an entire 12 months of data is available (*i.e.*, in the United States, from the beginning of fall semester through the end of summer courses).

- a. Freshman (year one)
- b. Sophomore (year two)
- c. Junior (year three)
- d. Senior (year four)
- e. Gap year (study abroad between high school and college)
- f. Other (*Please specify*) _____
- g. Don't know
- h. I would rather not answer

13. What was the average age of undergraduate students who participated in your study abroad office programs that studied abroad during the previous academic year? Do NOT include students who studied abroad, but were not tracked through your study abroad office. The "previous academic year" is the 12 month period between the start college/university courses through the end of college/university courses in which an entire 12 months of data is available (*i.e.*, in the United States, from the beginning of fall semester through the end of summer courses).

- a. < 18 years
- b. 18 years
- c. 19 years
- d. 20 years
- e. 21 years
- f. 22 years
- g. 23 years
- h. 24 years
- i. > 24 years
- j. Don't know
- k. I would rather not answer

14. What percent of undergraduate students who participated in your study abroad office programs during the previous academic year identified as female? Do NOT include students who studied abroad, but were not tracked through your study abroad office. The "previous academic year" is the 12 month period between the start college/university courses through the end of college/university courses in which an entire 12 months of data is available (*i.e.*, in the United States, from the beginning of fall semester through the end of summer courses).

- a. < 20%
- b. 20 to 25%
- c. 26 to 30%
- d. 31 to 35%
- e. 36 to 40%
- f. 41 to 45%
- g. 46 to 50%
- h. 51 to 55%
- i. 56 to 60%
- j. 61 to 65%
- k. 66 to 70%
- l. 71 to 75%
- m. 76 to 80%
- n. > 80%
- o. Don't know
- p. I would rather not answer

15. What was the most common race of undergraduate students who participated in your study abroad office programs during the previous academic year? Do NOT include students who studied abroad, but were not tracked through your study abroad office. The "previous academic year" is the 12 month period between the start college/university courses through the end of college/university courses in which an entire 12 months of data is available (*i.e.*, in the United States, from the beginning of fall semester through the end of summer courses).

- a. White
- b. Black or African American
- c. Native American or American Indian
- d. Asian / Pacific Islander
- e. Other (*Please specify*) _____

- f. Don't know
- g. I would rather not answer

16. What was the most common ethnicity of undergraduate students who participated in your study abroad office programs during the previous academic year? Do NOT include students who studied abroad, but were not tracked through your study abroad office. The "previous academic year" is the 12 month period between the start college/university courses through the end of college/university courses in which an entire 12 months of data is available (i.e., in the United States, from the beginning of fall semester through the end of summer courses).

- a. Hispanic
- b. Non-Hispanic
- c. Don't know
- d. I would rather not answer

17. What were the most common (and second and third most common) geographic regions that undergraduate students who participated in your study abroad office programs studied in during the previous academic year? Do NOT include students who studied abroad, but were not tracked through your study abroad office. The "previous academic year" is the 12 month period between the start college/university courses through the end of college/university courses in which an entire 12 months of data is available (i.e., in the United States, from the beginning of fall semester through the end of summer courses). Select one from each column. The following question will ask specific questions about the most common cities and countries.

Most Common	Second Most Common	Third Most Common
a. North Africa	a. North Africa	a. North Africa
b. Sub-Saharan Africa	b. Sub-Saharan Africa	b. Sub-Saharan Africa
c. South Asia*	c. South Asia*	c. South Asia*
d. East Asia*	d. East Asia*	d. East Asia*
e. Southeast Asia*	e. Southeast Asia*	e. Southeast Asia*
f. Central Asia*	f. Central Asia*	f. Central Asia*
g. Middle East	g. Middle East	g. Middle East
h. Australia and New Zealand	h. Australia and New Zealand	h. Australia and New Zealand
i. Pacific Islands	i. Pacific Islands	i. Pacific Islands
j. Western Europe	j. Western Europe	j. Western Europe
k. Eastern Europe	k. Eastern Europe	k. Eastern Europe
l. Central America	l. Central America	l. Central America
m. South America	m. South America	m. South America
n. Caribbean	n. Caribbean	n. Caribbean
o. North America	o. North America	o. North America
p. Don't know	p. Don't know	p. Don't know
q. I would rather not answer	q. I would rather not answer	q. I would rather not answer

*South Asia: Afghanistan, Bangladesh, Bhutan, Maldives, Nepal, India, Pakistan, Sri Lanka
 East Asia: China, Hong Kong, Japan, Macau, Mongolia, North Korea, South Korea, Taiwan

Southeast Asia: [Brunei](#), [Cambodia](#), [Indonesia](#), [Laos](#), [Malaysia](#), [Myanmar](#) (Burma), [The Philippines](#), [Singapore](#), [Thailand](#), [Timor-Leste](#), [Vietnam](#)
 Central Asia: [Kazakhstan](#), [Uzbekistan](#), [Tajikistan](#), [Turkmenistan](#), [Kyrgyzstan](#)

18. What were the top five most popular locations (city and country) among undergraduate students who participated in your study abroad office programs during the previous academic year? Do NOT include students who studied abroad, but were not tracked through your study abroad office. The "previous academic year" is the 12 month period between the start college/university courses through the end of college/university courses in which an entire 12 months of data is available (*i.e.*, in the United States, from the beginning of fall semester through the end of summer courses).

CITY	COUNTRY	NUMBER OF STUDENTS FROM THE PREVIOUS ACADEMIC YEAR
1.	1.	
2.	2.	
3.	3.	
4.	4.	
5.	5.	

- a. Don't know
- b. I would rather not answer

University Study Abroad Office Practices

The following questions are regarding CURRENT practices in your study abroad office.

19. How many full time staff are employed directly with the study abroad office at your college/university?

- a. 1 to 2
- b. 3 to 4
- c. 5 or more
- d. Don't know
- e. I would rather not answer

20. How many part time staff (including work-study students) are employed directly with the study abroad office at your college/university?

- a. 1 to 2
- b. 3 to 4
- c. 5 or more
- d. Don't know
- e. I would rather not answer

21. How many study abroad staff members at your college/university focus on health-related study abroad issues?

- a. None
- b. 1 to 2

- c. 3 to 4
- d. 5 or more
- e. Don't know
- f. I would rather not answer

22. Are all study abroad programs or destinations organized through your college/university study abroad office, or are some programs or destinations delivered through partnerships with private agencies or other colleges/universities? Check all that apply.

- a. All programs or destinations are delivered through our college/university only
- b. Some programs or destinations are delivered through partnerships with private agencies
- c. Some programs or destinations are delivered through partnerships with other colleges/universities
- d. Other (*Please specify*) _____
- e. Don't know
- f. I would rather not answer

23. Does your college/university study abroad office have written policies regarding pre-travel healthcare visits for undergraduate students who are preparing to study abroad?

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

24. Does your college/university study abroad office suggest, recommend, or mandate that undergraduate students see a healthcare provider before traveling to study abroad?

- a. Yes
- b. Sometimes (*Please describe*) _____
- c. No (*Please skip to question 31*)
- d. Don't know (*Please skip to question 31*)
- e. I would rather not answer

25. Does this suggestion, recommendation, or mandate vary depending on the amount of health risks at the study abroad destination or on the student's pre-travel medical conditions?

- a. Yes, it depends on the study abroad destination only; only students traveling to "high risk" destinations should see a healthcare provider
- b. Yes, it depends on the study abroad destination and the student's pre-travel medical conditions;
- c. Yes, it depends on the student's pre-travel medical conditions only
- d. No, it does not depend on either of these factors; all students should see a healthcare provider
- e. No, it depends on other factors (*Please specify*)

- f. Don't know
- g. I would rather not answer

26. Does your college/university study abroad office recommend an optimal time pre-travel for the undergraduate student to see a healthcare provider?

- a. Yes
- b. No (*Please skip to question 28*)
- c. Don't know (*Please skip to question 28*)
- d. I would rather not answer (*Please skip to question 28*)

27. What is the recommended timeframe for seeking pre-travel healthcare?

- a. < 1 week before travel
- b. 1 to 2 weeks before travel
- c. 2 to 4 weeks before travel
- d. 4 to 6 weeks before travel
- e. 6 to 8 weeks before travel
- f. > 8 weeks before travel
- g. Don't know
- h. I would rather not answer

28. Does your college/university study abroad office make it mandatory for undergraduate students to attend a visit with a healthcare provider before traveling to study abroad?

- a. Yes
- b. Sometimes (*Please describe*) _____
- c. No, it is only recommended or suggested (*Please skip to question 30*)
- d. Don't know (*Please skip to question 30*)
- e. I would rather not answer (*Please skip to question 30*)

29. Where are the students sent for this visit? Check all that apply.

- a. Student health center at the college/university (*Please skip to question 32*)
- b. Travel medicine specialist (*Please skip to question 32*)
- c. Primary care provider (*Please skip to question 32*)
- d. Health department (*Please skip to question 32*)
- e. Other (*Please specify*) _____ (*Please skip to question 32*)
- f. Don't know (*Please skip to question 32*)
- g. I would rather not answer (*Please skip to question 32*)

30. Does the college/university study abroad office have a specific medical care location (e.g., student health center, medical office, health department, etc.) it recommends that undergraduate students attend a visit with a healthcare provider before traveling to study abroad?

- a. Yes
- b. No (*Please skip to question 32*)
- c. Don't know (*Please skip to question 32*)
- d. I would rather not answer (*Please skip to question 32*)

31. Where are the students told to go for this visit? Check all that apply.

- a. Student health center at the college/university
- b. Travel medicine specialist

- c. Primary care provider
- d. Health department
- e. Other (*Please specify*) _____
- f. Don't know
- g. I would rather not answer

32. To the best of your knowledge, what percent of undergraduate students preparing to study abroad from your college/university attend a visit with a healthcare provider before traveling to study abroad?

- a. None
- b. < 25%
- c. 26% to 50%
- d. 51% to 75%
- e. > 75%
- f. 100%
- g. Don't know
- h. I would rather not answer

33. Does your college/university have a student health center?

- a. Yes
- b. No (*Please skip to question 35*)
- c. Don't know (*Please skip to question 35*)
- d. I would rather not answer (*Please skip to question 35*)

34. To the best of your knowledge, do undergraduate students receive pre-travel care at the student health center?

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

35. Are students asked to disclose health information (including physical health, mental health and disability concerns, etc.) to the study abroad office (or program) during the application process?

- a. Yes
- b. No (*Please skip to question 37*)
- c. Don't know (*Please skip to question 37*)
- d. I would rather not answer (*Please skip to question 37*)

36. How does the study abroad office (or program) use this health information? *Check all that apply.*

- a. Advise/require the student to follow up with their primary care provider
- b. Advise/require the student to follow up with a travel medicine specialist
- c. Advise/require the student to follow up with the student health center
- d. Advise/require the student follow up with a mental health professional
- e. Review the health information with the student health center
- f. Review the health information with a medical/mental health professional

- g. Have student sign form acknowledging risk
- h. Other (*Please specify*) _____
- i. None of the above
- j. Don't know
- k. I would rather not answer

37. Does your college/university study abroad office have written policies in place regarding medical travel insurance for undergraduate students who are preparing to study abroad?

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

38. Does your college/university study abroad office suggest, recommend, or mandate that undergraduate students obtain medical travel insurance before traveling to study abroad?

- a. Yes, it is suggested or recommended (*Please skip to question 40*)
- b. Yes, it is mandated or required
- c. No (*Please skip to question 44*)
- d. Don't know (*Please skip to question 44*)
- e. I would rather not answer (*Please skip to question 44*)

39. If required or mandated, from what sources do students obtain medical travel insurance? Check all that apply.

- a. The college/university supplies it, free of charge to the student (*Please skip to question 42*)
- b. The college/university supplies it, but the student must pay for the coverage (*Please skip to question 42*)
- c. The students obtain supplemental insurance directly from the insurance company (*Please skip to question 43*)
- d. Students must change their existing policy to include international coverage (*Please skip to question 43*)
- e. Other (*Please specify*) _____ (*Please skip to question 44*)
- f. Don't know (*Please skip to question 44*)
- g. I would rather not answer (*Please skip to question 44*)

40. If medical travel insurance is recommended or suggested, are students directed to where to obtain it and what it should cover?

- a. Yes
- b. No (*Please skip to question 43*)
- c. Don't know (*Please skip to question 43*)
- d. I would rather not answer (*Please skip to question 43*)

41. If recommended or suggested, where are the students told to obtain medical travel insurance from? Check all that apply.

- a. The college/university supplies it, free of charge to the student
- b. The college/university supplies it, but the student must pay for the coverage

- c. The students obtain supplemental insurance directly from the insurance company (*Please skip to question 43*)
- d. Students must change their existing policy to include international coverage (*Please skip to question 43*)
- e. Other (*Please specify*) _____ (*Please skip to question 44*)
- f. Don't know (*Please skip to question 44*)
- g. I would rather not answer (*Please skip to question 44*)

42. Does the travel insurance that your college/university provides to undergraduate students studying abroad cover the following:

General accident and illness coverage?

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

24-hour emergency assistance?

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

Medical evacuation?

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

Repatriation (*return of remains; pertains if death is experienced while abroad*)?

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

43. If students preparing to study abroad obtain medical coverage outside of the college/university, which of the following (if any) is the travel insurance policy suggested to cover:

General accident and illness coverage?

- a. Yes
- b. No
- c. There is no guidance in our policy
- d. Don't know
- e. I would rather not answer

24-hour emergency assistance?

- a. Yes
- b. No
- c. There is no guidance in our policy
- d. Don't know
- e. I would rather not answer

Medical Evacuation?

- a. Yes
- b. No
- c. There is no guidance in our policy
- d. Don't know
- e. I would rather not answer

Repatriation (*of remains; pertains if death is experienced while abroad*)?

- a. Yes
- b. No
- c. There is no guidance in our policy
- d. Don't know
- e. I would rather not answer

44. If your college/university is in the United States, does your college/university study abroad office mandate or encourage your undergraduate students to register with the State Department's Smart Traveler Enrollment Program (STEP)?

- a. Yes, it is mandated
- b. Yes, it is encouraged but not mandated
- c. No
- d. Don't know
- e. I would rather not answer
- f. Not applicable, my college/university is outside of the United States

45. Does your college/university study abroad office provide undergraduate students studying abroad with emergency contact information for personnel at the college/university in the event of an incident while abroad?

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

46. Does your college or university mandate or recommend that students attend a college/university pre-travel education or training session prior to studying abroad? This can be led by an instructor in a classroom, as a webinar, a teleconference, etc.

- a. Yes, it is mandated or required
- b. Yes, it is encouraged but not mandated
- c. No
- d. Don't know
- e. I would rather not answer

47. Does your college/university study abroad office direct undergraduate students who are preparing to study abroad to any of the following health-related information? *Check all that apply.*

- a. National Association of International Educators (NAFSA)
- b. Centers for Disease Control and Prevention Travelers' (CDC) webpage or CDC Travelers' Health webpage

- c. Safety Abroad First-Educational Travel Information (SAFTI) Clearinghouse
- d. Global Scholar
- e. State Department
- f. Center for Disease Control and Prevention’s Yellow Book, Health Information on International Travel
- g. College/university student health website
- h. College/university student health printed materials
- i. World Health Organization
- j. Institut Pasteur
- k. Other (*Please specify*) _____
- l. None of the above
- m. Don’t know
- n. I would rather not answer

48. Do student study abroad program staff from your college/university accompany student groups studying abroad?

- a. Yes, always
- b. Yes, sometimes (*Please describe the circumstances in which staff would accompany the students*) _____
- c. No
- d. Don’t know
- e. I would rather not answer

49. Does a health professional from your college/university accompany student groups studying abroad?

- a. Yes, always
- b. Yes, sometimes (*Please describe the circumstances in which staff would accompany the students*) _____
- c. No
- d. Don’t know
- e. I would rather not answer

50. Please provide any additional comments or information regarding any of the above questions here:

This survey is now completed.
Thank you very much for your time.

Appendix B: College/University Student Health Center Questionnaire

Date (MM/DD/YY) _____

The International Society of Travel Medicine (ISTM) is conducting a survey of college and university undergraduate study abroad offices, their undergraduate students who study abroad, and the student health centers. This survey involves an anonymous web-based questionnaire to identify gaps in preparedness, knowledge specific to this group of travelers, and health-related events encountered while abroad. With your help, we hope to improve the pre-travel preparation for students studying abroad and increase student's awareness of specific risks they may encounter while studying abroad.

Participation in this questionnaire is voluntary, and it will only take a moment of your time.

Please note that some of this information will require you to have demographic data on the students that you see in the health center (e.g., year of schooling, age, sex, race, ethnicity, and location of travel). Please generate any necessary reports prior to starting the questionnaire.

Informed Consent:

[INSERT INFORMED CONSENT: APPENDIX E]

If the informed consent is acknowledged electronically, the student health center staff will be directed to continue with the web-based questionnaire.

Beginning of the Questionnaire:

College/University Student Health Center Program Specifics

All of the following questions are specific to your college/university's student health center.

1. Name of the college/university:

- _____
- City: _____
 - State: _____
 - Country: _____

2. What is your role in the student health center?

- Physician (MD, DO, MBBS, MBChB, MB)

- b. Nurse (RN)
 - c. Nurse Practitioner
 - d. Physician's Assistant
 - e. Medical Assistant
 - f. Pharmacist
 - g. Front office staff
 - h. Other office staff
 - i. Other (*Please specify*) _____
 - j. Don't know
 - k. I would rather not answer
- 3. Do you as an individual have specialized health training to provide pre-travel or post-travel health services to students studying abroad?**
- a. Yes
 - b. No
 - c. Don't know
 - d. I would rather not answer
- 4. Does your student health center offer pre-travel counseling services (*i.e.*, supply general travel advice, prescribe medicine for malaria or travelers' diarrhea, and/or provide travel vaccinations) for college/university undergraduate students preparing to study abroad?**
- a. Yes (*Please skip to question 6*)
 - b. No
 - c. Don't know (*Please skip to question 6*)
- 5. To the best of your knowledge, what are the reasons your college/university health center does not offer pre-travel consulting services (*i.e.*, supply general travel advice, prescribe chemoprophylaxis for malaria or travelers' diarrhea, and/or provide travel vaccinations)? *Check all that apply.***
- a. The college/university does not have students who study abroad
 - b. The health center does not have the staff available to offer this service
 - c. The health center does not have the expertise to offer this service
 - d. Students are referred off campus for those services
 - e. Other (*Please specify*) _____
 - f. None of the above
 - g. Don't know
 - h. I would rather not answer
- 6. To the best of your knowledge, where do undergraduate students at your college/university obtain health-related information before leaving to study abroad? *Check all that apply.***
- a. Consultation with a health professional
 - b. Participating in college/university pre-travel education or training
 - c. Online resources
 - d. Books
 - e. Peers

- f. Study abroad office staff
- g. Private agency study abroad staff
- h. Other (*Please specify*) _____
- i. None of the above
- j. Don't know
- k. I would rather not answer

→ *This is the end of the questionnaire for those who select "No" to question 4.*

Study Abroad Students at the College/University Student Health Center

7. For the purposes of this study, we focus some questions on the "previous academic year." This is defined as the 12 month period between the start of university/college courses through the end of college/university courses in which an entire 12 months of data are available. (*i.e.*, in the United States, from the beginning of the fall semester through the end of the summer courses).

Please note of the MONTH of the START of the "previous academic year as it applies to your institution. _____

Please note of the YEAR of the START of the "previous academic year as it applies to your institution. _____

Please note of the MONTH of the END of the "previous academic year as it applies to your institution. _____

Please note of the YEAR of the END of the "previous academic year as it applies to your institution. _____

How many undergraduate students who are preparing to study abroad did the student health center provide pre-travel care and/or travel counseling to during the previous academic year?

- a. < 10 students
 - b. 10 to 50 students
 - c. 51 to 100 students
 - d. 101 to 500 students
 - e. 501 to 1,000 students
 - f. > 1,000 students
 - g. Don't know
 - h. I would rather not answer
8. What year of schooling is the most common among undergraduate students preparing to study abroad who sought a pre-travel consultation from the student health center?
- a. Freshman (year one)
 - b. Sophomore (year two)
 - c. Junior (year three)

- d. Senior (year four)
 - e. Gap year (study abroad between high school and college)
 - f. Other (*Please specify*) _____
 - g. Don't know
 - h. I would rather not answer
- 9. What was the average age of undergraduate students preparing to study abroad that sought a pre-travel consultation from the student health center during the previous academic year?**
- a. < 18 years
 - b. 18 years
 - c. 19 years
 - d. 20 years
 - e. 21 years
 - f. 22 years
 - g. 23 years
 - h. 24 years
 - i. > 24 years
 - j. Don't know
 - k. I would rather not answer
- 10. What percent of undergraduate students preparing to study abroad that sought a pre-travel consultation from the student health center during the previous academic year identified as female?**
- a. < 20%
 - b. 20 to 25%
 - c. 26 to 30%
 - d. 31 to 35%
 - e. 36 to 40%
 - f. 41 to 45%
 - g. 46 to 50%
 - h. 51 to 55%
 - i. 56 to 60%
 - j. 61 to 65%
 - k. 66 to 70%
 - l. 71 to 75%
 - m. 76 to 80%
 - n. > 80%
 - o. Don't know
 - p. I would rather not answer
- 11. What was the most common race of undergraduate students preparing to study abroad who sought a pre-travel consultation from the student health center during the previous academic year?**
- a. White
 - b. Black or African American
 - c. Native American or American Indian

- d. Asian / Pacific Islander
- e. Other (*Please specify*) _____
- f. Don't know
- g. I would rather not answer

12. What was the most common ethnicity of undergraduate students preparing to study abroad who sought a pre-travel consultation from the student health center during the previous academic year?

- a. Hispanic
- b. Non-Hispanic
- c. Don't know
- d. I would rather not answer

13. What was the most common geographic region of undergraduate students preparing to study abroad who sought a pre-travel consultation from the student health center during the previous academic year?

- a. North Africa
- b. Sub-Saharan Africa
- c. South Asia*
- d. East Asia*
- e. Southeast Asia*
- f. Central Asia*
- g. Middle East
- h. Australia and New Zealand
- i. Pacific Islands
- j. Western Europe
- k. Eastern Europe
- l. North America (includes Mexico)
- m. Central America
- n. South America
- o. Caribbean
- p. Don't know
- q. I would rather not answer

*South Asia: Afghanistan, Bangladesh, Bhutan, Maldives, Nepal, India, Pakistan, Sri Lanka; East Asia: China, Hong Kong, Japan, Macau, Mongolia, North Korea, South Korea, Taiwan; Southeast Asia: [Brunei](#), [Cambodia](#), [Indonesia](#), [Laos](#), [Malaysia](#), [Myanmar](#) (Burma), [The Philippines](#), [Singapore](#), [Thailand](#), [Timor-Leste](#), [Vietnam](#); Central Asia: [Kazakhstan](#), [Uzbekistan](#), [Tajikistan](#), [Turkmenistan](#), [Kyrgyzstan](#)

14. What were the top three most popular locations (country) of undergraduate students preparing to study abroad who sought a pre-travel consultation from the student health center during the previous academic year?

- a. Data available, see below
- b. Data not available (*Please skip to question 15*)
- c. Don't know (*Please skip to question 15*)

COUNTRY	NUMBER OF STUDENTS FROM THE PREVIOUS ACADEMIC YEAR
---------	--

1.	
2.	
3.	

College/University Student Health Center Practices: Pre-travel

15. Does the student health center provide general travel-related advice (both infectious and non-infectious) to undergraduate students preparing to study abroad?

- a. Yes
- b. No (*Please skip to question 19*)
- c. Don't know
- d. I would rather not answer

16. Do you personally provide any health counseling to undergraduate students preparing to study abroad?

- a. Yes
- b. No (*Please skip to question 18*)
- c. Don't know (*Please skip to question 18*)
- d. I would rather not answer (*Please skip to question 18*)

17. When you provide a pre-travel consultation, which of the following topics do you routinely cover? *Check all that apply.*

- a. Immunizations
- b. Chemoprophylaxis for malaria
- c. How to prevent other vector-borne diseases (*e.g.*, Zika, dengue, etc.)
- d. Travelers' diarrhea
- e. Rabies exposure instructions
- f. Altitude illness
- g. Environmental hazards (including, but not limited to illness associated with extreme heat or cold, weather-related incidents, or air pollution)
- h. Personal safety (including, but not limited to, avoiding pedestrian accidents, animal avoidance, extreme sports, gender-related safety concerns, etc.)
- i. Country-specific concerns (*e.g.*, political unrest, etc.)
- j. Sexual health
- k. Mental health
- l. Other (*Please specify*) _____
- m. None of the above
- n. Don't know
- o. I would rather not answer

18. Which resources are used at the student health center to guide recommendations to undergraduate students preparing to study abroad? *Check all that apply.*

- a. Center for Disease Control and Prevention's Yellow Book, Health Information on International Travel
- b. Centers for Disease Control and Prevention's (CDC) Travelers' Health webpage

- c. State Department webpage
- d. TRAVEX
- e. TROPI-MED
- f. International Society of Travel Medicine (ISTM)
- g. International Association for Medical Assistance for Travelers (IAMAT)
- h. American Travel Nurses Association (ATHNA)
- i. Passport Health webpage
- j. Your state/local public health department
- k. Up to Date
- l. World Health Organization
- m. Institut Pasteur
- n. Other (*Please specify*) _____
- o. None of the above
- p. Don't know
- q. I would rather not answer

19. In general, if undergraduate students who are preparing to study abroad have additional questions on health-related aspects of their upcoming travel, where does your college/university direct them? Check all that apply.

- a. National Association of International Educators (NAFSA)
- b. Centers for Disease Control and Prevention Travelers' Health webpage
- c. Safety Abroad First-Educational Travel Information (SAFTI) Clearinghouse
- d. Global Scholar
- e. State Department website
- f. Center for Disease Control and Prevention's Yellow Book, Health Information on International Travel
- g. College/university student health website
- h. World Health Organization
- i. Institut Pasteur
- j. Other (*Please specify*) _____
- k. None of the above
- l. Don't know
- m. I would rather not answer

20. If your college/university is in the United States, do you mandate or encourage your undergraduate students to register with the State Department's Smart Traveler Enrollment Program (STEP)?

- a. Yes, it is mandated
- b. Yes, it is encouraged but not mandated
- c. No
- d. Don't know
- e. I would rather not answer
- f. Not applicable, my college/university is outside of the United States

21. Does the student health center have the ability to provide vaccinations to undergraduate students preparing to study abroad?

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

22. Does your student health center keep vaccines in stock?

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

Vaccine	Available in the Student Health Center (Yes/No/Don't Know)		
Cholera	Y	N	DK
Hepatitis A	Y	N	DK
Hepatitis B	Y	N	DK
Herpes zoster	Y	N	DK
Influenza	Y	N	DK
Japanese encephalitis	Y	N	DK
Measles, Mumps, Rubella (MMR)	Y	N	DK
Meningococcal (either polysaccharide or conjugate)	Y	N	DK
Pneumococcal	Y	N	DK
Polio	Y	N	DK
Rabies	Y	N	DK
Tetanus, diphtheria, and/or pertussis (Td, DT, DTaP, Tdap)	Y	N	DK

Tick-borne encephalitis	Y	N	DK
Typhoid (V1 capsular)	Y	N	DK
Typhoid (oral live attenuated)	Y	N	DK
Varicella	Y	N	DK
Yellow fever	Y	N	DK

23. In the event that a certain travel vaccine may not be available, where are undergraduate students preparing to study abroad referred in order to obtain the vaccine? Check all that apply.

- a. A travel clinic
- b. Their primary care provider
- c. Emergency department
- d. Urgent care
- e. State/local health department
- f. Other (*Please specify*) _____
- g. None of the above
- h. Don't know
- i. I would rather not answer

24. Does your student health center prescribe travel-related medications (*i.e.*, malaria chemoprophylaxis, acetazolamide for altitude sickness, or antibiotics to prevent travelers' diarrhea, etc.) to undergraduate students preparing to study abroad?

- a. Yes
- b. No (*Please skip to question 26*)
- c. Don't know
- d. I would rather not answer

25. To the best of your knowledge, where do undergraduate students fill prescriptions for travel-related medications? Check all that apply.

- a. At a college/university-affiliated pharmacy on campus
- b. At a non-college/university affiliated pharmacy on campus (*i.e.*, a CVS located on campus grounds)
- c. At a non-college/university affiliated pharmacy off campus
- d. Mail-order
- e. Other (*Please specify*) _____
- f. None of the above
- g. Don't know
- h. I would rather not answer

College/University Student Health Center Practices: Post-travel

26. Does your health center provide post-travel healthcare services to students returning from their study abroad program?

- a. Yes
- b. No (*End of questionnaire*)
- c. Don't know (*End of questionnaire*)
- d. I would rather not answer (*End of questionnaire*)

27. How many undergraduate students were seen in the previous academic year with a travel-related health issue (infectious or non-infectious) after returning from their study abroad experience?

- a. None
- b. 1 to 20 students
- c. 21 to 50 students
- d. 51 to 75 students
- e. 76 to 100 students
- f. > 100 students
- g. Don't know
- h. I would rather not answer

28. What were the top 3 diagnoses among undergraduate students seen in the previous academic year with a travel-related health issue (infectious or non-infectious) after returning from their study abroad experience at the student health center?

Diagnosis	NUMBER OF STUDENTS FROM THE PREVIOUS ACADEMIC YEAR
1.	1.
2.	2.
3.	3.

29. Please provide any additional comments or information regarding any of the above questions here:

This survey is now completed.

Thank you very much for your time.

Appendix C: Student Study Abroad Health-related Events Questionnaire

Date (MM/DD/YY) _____

The International Society of Travel Medicine (ISTM) is conducting a survey of the University of Pittsburgh undergraduate students returning from study abroad. The purpose of this survey is to identify gaps in preparedness and knowledge, and identify health-related events encountered while abroad. For that reason, we will be surveying college students recently returned from University of Pittsburgh travel abroad programs and ask them to complete a brief (less than 30 minutes) questionnaire. With your help, we hope to improve the pre-travel preparation for students studying abroad and increase student's awareness of specific risks they may encounter while studying abroad.

If you are willing to participate, the questionnaire will ask about background (*e.g.*, age, race, gender), as well as health-related events encountered during your most recent study abroad experience. There is no direct benefit to participation. This is an anonymous questionnaire, and your responses will not be identifiable in any way. All answers are **confidential** and **anonymous** and your responses will be kept in a password protected database. Your participation is voluntary and you may withdraw from the project at any time prior to submitting the survey.

There is a minimal risk of breach of confidentiality. All data collected will be kept secure; only the study researchers will have access to the records. The university will not have access to individual questionnaire responses and study researchers will not have access to student email address, thus no data can be linked to an individual participant.

Please note that some questions may be sensitive in nature. You may choose not to respond to a question for personal reasons by choosing "I would rather not answer."

Each participant will receive a \$5 gift card once the survey is completed in its entirety. This study is being conducted by Sarah Kohl, MD, who can be reached at (404) 373-8282, if you have any questions.

Participation in this questionnaire is voluntary, and it will take about 30 minutes to complete.

Screening for eligibility:

1. **Are you an undergraduate student currently enrolled in a college or university education or degree program?**

 Yes*

 No

 Don't know

2. Did you complete a study abroad program at your college/university?

<input type="checkbox"/> Yes*	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
-------------------------------	-----------------------------	-------------------------------------

3. Are you at least 18 years of age?

<input type="checkbox"/> Yes*	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
-------------------------------	-----------------------------	-------------------------------------

4. Are you willing to complete an anonymous web-based questionnaire about health-related events from your time abroad?

<input type="checkbox"/> Yes*	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
-------------------------------	-----------------------------	-------------------------------------

**If yes to ALL of the 4 screening questions, the student is eligible to continue with the questionnaire.*

Informed Consent:

[INSERT INFORMED CONSENT: APPENDIX E]

If the informed consent is acknowledged electronically, the student will be directed to continue with the web-based questionnaire.

Beginning of the Questionnaire:

None of the following responses are shared in any way with the college or university, nor will the results be identifiable upon dissemination of findings to your particular college or university. Please note that some questions may be sensitive in nature, but you have the option to choose "I would rather not answer" if you do not want to respond for personal reasons.

ALL DATA IS FOR YOUR MOST RECENT STUDY ABROAD EXPERIENCE ONLY.

Study Abroad Demographics

University name			
City		State	

Country	
----------------	--

1. **How old were you when you *began* your most recent study abroad experience?**
 - a. < 18 years old
 - b. 18 to 19 years old
 - c. 20 to 21 years old
 - d. 22 to 23 years old
 - e. > 23 years old
 - f. Don't know
 - g. I would rather not answer

2. **What is your current gender identity?**
 - a. Man
 - b. Woman
 - c. Both/neither/fluid
 - d. Not listed (*Please specify*) _____
 - e. Don't know
 - f. I would rather not answer

3. **Do you identify as transgender?**
 - a. Yes
 - b. No
 - c. Don't know
 - d. I would rather not answer

4. **What is your race?**
 - a. White
 - b. Black or African American
 - c. Native American or American Indian
 - d. Asian
 - e. Native Hawaiian or other Pacific Islander
 - f. Other (*Please specify*) _____
 - g. Don't know
 - h. I would rather not answer

5. **What is your ethnicity?**
 - a. Hispanic
 - b. Non-Hispanic
 - c. Don't know
 - d. I would rather not answer

6. **What is your focus of study (major) at your college/university?**
 - a. Arts (*e.g.*, art history, cinematography, design, digital arts, film, etc.)
 - b. Biologic science (*e.g.*, agriculture, animal science, biology, genetics, nursing, etc.)

- c. Physical sciences (*e.g.*, physics, chemistry, astronomy, geology, etc.)
- d. Business (*e.g.*, accounting, economics, finance, informatics, management, marketing, etc.)
- e. Education (*e.g.*, elementary education, etc.)
- f. Engineering or technology (*e.g.*, bioengineering, applied mathematics, materials science)
- g. Literature or language (*e.g.*, anthropology, communication, geography)
- h. Social sciences (*e.g.*, criminology, international studies, political science, psychology, sociology)
- i. Other (*Please specify*) _____
- j. Undeclared
- k. I would rather not answer

7. In what subjects were your classes while studying abroad? *Select all that apply.*

- a. Arts (*e.g.*, art history, cinematography, design, digital arts, film, etc.)
- b. Biologic science (*e.g.*, agriculture, animal science, biology, genetics, nursing, physics, etc.)
- c. Physical sciences (*e.g.*, physics, chemistry, astronomy, geology, etc.)
- d. Business (*e.g.*, accounting, economics, finance, informatics, management, marketing, etc.)
- e. Education (*e.g.*, elementary education, etc.)
- f. Engineering or technology (*e.g.*, bioengineering, applied mathematics, materials science)
- g. Literature or language (*e.g.*, anthropology, communication, geography)
- h. Social sciences (*e.g.*, criminology, international studies, political science, psychology, sociology)
- i. Other (*Please specify*) _____
- j. Don't know
- k. I would rather not answer

8. Which of the following best describes the academic year when you studied abroad?

If you studied abroad in the summer or between two academic years, please choose the academic year you started after your return from studying abroad.

- a. Freshman (year one)
- b. Sophomore (year two)
- c. Junior (year three)
- d. Senior (year four)
- e. Gap year (study abroad between high school and college)
- f. Other (*Please specify*) _____
- g. Don't know
- h. I would rather not answer

9. What city(ies) and country(ies) did you recently return from studying abroad in?

City _____

Country _____

10. Was the setting of your recent study abroad destination urban or rural?

- a. Urban (in a city)
- b. Rural (outside a city)
- c. Don't know
- d. I would rather not answer

11. Which of the following was the purpose of your study abroad travel?

- a. Study / academic coursework
- b. Research
- c. Internship
- d. Service
- e. Conferences or presentations
- f. Recruiting
- g. Athletic competition
- h. Other (*Please specify*) _____
- i. Don't know
- j. I would rather not answer

12. What was the duration of your recent study abroad-related travels?

The study abroad duration is the total time spent fulfilling the purpose of study abroad travel in-country.

- a. < 4 weeks
- b. 4 weeks to 8 weeks (*i.e.*, summer or winter session)
- c. > 8 weeks to 12 weeks (*i.e.*, quarter session)
- d. > 12 weeks to 24 weeks (*i.e.*, semester session)
- e. > 24 weeks to 32 weeks (*i.e.*, extended semester or two quarter sessions)
- f. > 32 weeks (*i.e.*, academic or calendar year)
- g. Don't know
- h. I would rather not answer

13. What was your primary residence while studying abroad? *Select all that apply.*

- a. Dormitory or other student housing
- b. Hostel
- c. Home stay with relatives
- d. Home stay with non-relatives
- e. Hotel
- f. Other (*Please specify*) _____
- g. Don't know
- h. I would rather not answer

14. Was your study abroad experience coordinated directly through your college/university, through an external private agency, or affiliated with a college/university other than your own?

- a. Directly through my college/university
- b. Through an external private agency

- i. If it was through an external agency, please list the agency here:

- c. Through a college/university other than your own
 - i. If it was through a college/university other than your own, please list the college/university here: _____
- d. Through a university-related organization (e.g., Engineers Without Borders)
 - i. Please list the organization here: _____
- e. Other (*Please specify*) _____
- f. Don't know
- g. I would rather not answer

15. Did you stay the full duration of your study abroad program?

- a. Yes (*Please state the reason for returning early:* _____)
- b. No
- c. Don't know
- d. I would rather not answer

Pre-travel Preparations

16. Did your college/university suggest, recommend, or mandate that you see a healthcare provider before studying abroad?

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

17. Did you see a healthcare provider for travel-related advice before studying abroad?

- a. Yes
- b. No (*Please skip to question 22*)
- c. Don't know (*Please skip to question 22*)
- d. I would rather not answer (*Please skip to question 22*)

18. Where did you go for the healthcare provider visit? *Select all that apply.*

- a. Student health center at the college/university
- b. Travel medicine specialist
- c. Primary care provider
- d. Health department
- e. Other (*Please specify*) _____
- f. My college/university did not require me to have a pre-travel visit, and I did not attend one
- g. Don't know
- h. I would rather not answer

19. How long before departure was your pre-travel visit with a healthcare provider?

- a. < 1 week

- b. 1 to 2 weeks
 - c. 2 to 3 weeks
 - d. 3 to 4 weeks
 - e. 5 to 6 weeks
 - f. 6 to 7 weeks
 - g. 7 to 8 weeks
 - h. > 8 weeks
 - i. Don't know
 - j. I would rather not answer
- 20. Were you given medication before your trip (e.g., atovoquone/proguanil [malarone], mefloquine [Lariam], doxycycline, chloroquine [Aralen], etc.) to help prevent malaria?**
- a. Yes
 - b. No (*Please skip to question 22*)
 - c. Don't know (*Please skip to question 22*)
 - d. I would rather not answer (*Please skip to question 22*)
- 21. Did you take the malaria medication as prescribed?**
- a. Yes
 - b. No
 - c. Don't know
 - d. I would rather not answer
- 22. Did your college/university suggest, recommend, or mandate that you have medical travel insurance before studying abroad?**
- a. Yes
 - b. No
 - c. Don't know
 - d. I would rather not answer
- 23. Did you obtain supplemental (additional) medical travel insurance to cover you while you studied abroad?**
- a. Yes
 - b. No (*Please skip to question 25*)
 - c. Don't know (*Please skip to question 25*)
 - d. I would rather not answer (*Please skip to question 25*)
- 24. If you obtained supplemental (additional) medical travel insurance while you studied abroad, where did you obtain it?**
- a. My college/university supplies it, free of charge
 - b. My college/university supplies it, but I had to pay for it
 - c. I obtained supplemental insurance directly from the insurance company
 - d. I changed my existing policy to include international coverage
 - e. My parents took care of it for me since I am on their insurance plan
 - f. Other (*Please specify*) _____
 - g. Don't know

- h. I would rather not answer
- 25. Did the medical travel insurance that you had while abroad cover the following:**
- General accident and illness coverage?
- a. Yes
 - b. No
 - c. Don't know
 - d. I would rather not answer
- 24-hour emergency assistance?
- a. Yes
 - b. No
 - c. Don't know
 - d. I would rather not answer
- Medical Evacuation?
- a. Yes
 - b. No
 - c. Don't know
 - d. I would rather not answer
- Repatriation (*return of remains; pertains if death is experienced while abroad*)?
- a. Yes
 - b. No
 - c. Don't know
 - d. I would rather not answer
- 26. If you are a citizen of the United States, did you register with the State Department's Smart Traveler Enrollment Program (STEP) before studying abroad?**
- a. Yes
 - b. No
 - c. Don't know
 - d. I would rather not answer
 - e. Not applicable, I am not a United States citizen
- 27. Did your college/university provide you with emergency contact information for personnel at the college/university in the event of an incident while abroad?**
- a. Yes
 - b. No
 - c. Don't know
 - d. I would rather not answer
- 28. Where did you get health-related information prior to studying abroad? Check all that apply.**
- a. Consultation with a healthcare provider
 - b. National Association of International Educators (NAFSA)
 - c. Centers for Disease Control and Prevention Travelers' Health webpage
 - d. Safety Abroad First-Educational Travel Information (SAFTI) Clearinghouse
 - e. Global Scholar
 - f. State Department

- g. Center for Disease Control and Prevention's Yellow Book, Health Information on International Travel
- h. College/university student health office
- i. College/university student health website
- j. Advice from peers
- k. Study abroad office staff
- l. World Health Organization
- m. Institut Pasteur
- n. Other (*Please specify*) _____
- o. None of the above
- p. Don't know
- q. I would rather not answer

29. Did you attend a college/university pre-travel education or training session prior to studying abroad? This can be led by an instructor in a classroom, as a webinar, a teleconference, etc. and would be separate from a pre-travel healthcare or vaccination visit with a healthcare provider.

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

Knowledge and Prevention Practices

30. To the best of your knowledge, were any of the following infections a risk where you studied abroad?

Malaria

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

Dengue

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

Yellow fever

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

Japanese encephalitis

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

Zika virus

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

Meningitis (Meningococcal)

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

31. Did you use insect precautions (repellents, bednets, etc.) to avoid being bitten by mosquitoes, ticks, or other insects?

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

32. Did college/university staff from the study abroad office or program, accompany you (or your group) on your study abroad experience?

- a. Yes
- b. No (*Please skip to question 34*)
- c. Don't know (*Please skip to question 34*)
- d. I would rather not answer (*Please skip to question 34*)

33. Did you use this person as a resource for health-related questions that arose during your study abroad experience?

- a. Yes, this person was able to answer my question(s) or direct me to a resource to answer it
- b. Yes, but this person was unable to assist me
- c. No, I did not have any health-related questions while abroad
- d. Don't know
- e. I would rather not answer

Travel While Abroad

34. Did you travel to any other cities or countries than the one in which you were studying?

- a. Yes
- b. No (*Please skip to question 36*)
- c. Don't know (*Please skip to question 36*)
- d. I would rather not answer (*Please skip to question 36*)

35. Please list all countries and cities that you traveled to while studying abroad, including those that were not locations of your official study abroad experience. Also, please note the

duration of time (in days) you spent, in total, in each of these locations and the purpose of your travel there.

COUNTRY	CITIES	Total days	Purpose of Travel (Select all that apply)
1.	1.	1.	a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) _____
2.	2.	2.	a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) _____
3.	3.	3.	a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) _____
4.	4.	4.	a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) _____

5.	5.	5.	a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) _____
6.	6.	6.	a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) _____
7.	7.	7.	a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) _____
8.	8.	8.	a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) _____
9.	9.	9.	a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business

			f. Health or medical care g. Research h. Other (<i>Please specify</i>) _____
10.	10.	10.	a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) _____
11.	11.	11.	a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) _____
12.	12.	12.	a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) _____
13.	13.	13.	a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) _____

14.	14.	14.	<ul style="list-style-type: none"> a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) <hr/>
15.	15.	15.	<ul style="list-style-type: none"> a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) <hr/>
16.	16.	16.	<ul style="list-style-type: none"> a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) <hr/>
17.	17.	17.	<ul style="list-style-type: none"> a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) <hr/>
18.	18.	18.	<ul style="list-style-type: none"> a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business

			f. Health or medical care g. Research h. Other (<i>Please specify</i>) _____
19.	19.	19.	a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) _____
20.	20.	20.	a. Tourism b. Visiting friends/relatives c. Education (part of study abroad office) d. Education (NOT part of study abroad office) e. Business f. Health or medical care g. Research h. Other (<i>Please specify</i>) _____

- a. Don't know
- b. I would rather not answer

Infections Acquired While Abroad

36. Please indicate if you were diagnosed with any of the following infections while you were studying abroad.

If yes, please also list how long the illness lasted, the month in which you were diagnosed, if you were diagnosed by a licensed healthcare provider, if you were hospitalized, and if any treatment was received.

Please answer the questions to the best of your ability.

As a reminder, all responses are anonymous and confidential. Your responses will only be used for the purposes outlined for this study. Your college/university will not have access to your responses.

Infection (Yes/No/Don't Know)	Duration of Illness (days)	Month of Diagnosis	Diagnosed by a Licensed Healthcare Provider (Yes/No/Don't Know)	Hospitalized (Yes/No/Don't Know)	Treatment Received (Yes/No/Don't Know)
Infections from Mosquitoes, Sandflies, or Ticks					
Malaria (+ species) Y N DK	____ days Don't remember	_____ Don't remember	Y N DK	Y N DK	Y N DK
Dengue ("breakbone fever") Y N DK	____ days Don't remember	____/____ Don't remember	Y N DK	Y N DK	Y N DK
Yellow fever Y N DK	____ days Don't remember	____/____ Don't remember	Y N DK	Y N DK	Y N DK
Japanese encephalitis Y N DK	____ days Don't remember	____/____ Don't remember	Y N DK	Y N DK	Y N DK
Chikungunya ("chik") Y N DK	____ days Don't remember	____/____ Don't remember	Y N DK	Y N DK	Y N DK
West Nile Y N DK	____ days Don't remember	____/____ Don't remember	Y N DK	Y N DK	Y N DK
Zika Y N DK	____ days Don't remember	____/____ Don't remember	Y N DK	Y N DK	Y N DK
Leishmaniasis ("leish") Y N DK	____ days Don't remember	____/____ Don't remember	Y N DK	Y N DK	Y N DK
Rickettsial infections (e.g., Lyme disease, Y N DK	____ days Don't remember	____/____ Don't remember	Y N DK	Y N DK	Y N DK

African tick bite fever, typhus, etc.)	Don't remember	Don't remember			
Y N DK					
Intestinal Infections					
Travelers' diarrhea (this may have been called <i>Salmonella</i> , <i>E.coli</i> , <i>Campylobacter</i> , <i>Shigella</i> , <i>Yersinia</i> , <i>norovirus</i> , etc.)	_____ days Don't remember		Y N DK	Y N DK	Y N DK
Y N DK					
Giardiasis (<i>Giardia</i>)	_____ days Don't remember		Y N DK	Y N DK	Y N DK
Y N DK					
Typhoid/enteric fever (<i>Salmonella typhi</i>)	_____ days Don't remember		Y N DK	Y N DK	Y N DK
Y N DK					
Food poisoning	_____ days Don't remember		Y N DK	Y N DK	Y N DK
Y N DK					
Hepatitis A (hepatitis from contaminated food or water)	_____ days Don't remember		Y N DK	Y N DK	Y N DK
Y N DK					
Schistosomiasis ("schisto")	_____ days Don't remember		Y N DK	Y N DK	Y N DK
Y N DK					
Intestinal worm (<i>Please specify</i>) _____	_____ days Don't remember		Y N DK	Y N DK	Y N DK
Y N DK					
Strongyloidiasis (<i>Strongyloides</i>)	_____ days Don't remember		Y N DK	Y N DK	Y N DK
Y N DK					
Enterobiasis (Pinworm)	_____ days		Y N DK	Y N DK	Y N DK

Y N DK	Don't remember				
Gastroenteritis or colitis (Please specify) _____	____ days Don't remember		Y N DK	Y N DK	Y N DK
Y N DK					
Sexually Transmitted Infections					
HIV/AIDS	____ days		Y N DK	Y N DK	Y N DK
Y N DK	Don't remember				
Chlamydia	____ days		Y N DK	Y N DK	Y N DK
Y N DK	Don't remember				
Gonorrhea	____ days		Y N DK	Y N DK	Y N DK
Y N DK	Don't remember				
Syphilis (+ stage)	____ days		Y N DK	Y N DK	Y N DK
Y N DK	Don't remember				
Trichomonas ("tric")	____ days		Y N DK	Y N DK	Y N DK
Y N DK	Don't remember				
Genital herpes ("herpes")	____ days		Y N DK	Y N DK	Y N DK
Y N DK	Don't remember				
Genital warts ("warts")	____ days		Y N DK	Y N DK	Y N DK
Y N DK	Don't remember				
Pubic lice ("crabs")	____ days		Y N DK	Y N DK	Y N DK
Y N DK	Don't remember				
Respiratory Infections					
COVID-19 ("COVID")	____ days	____/____	Y N DK	Y N DK	Y N DK

Y N DK	Don't remember	Don't remember			
Tuberculosis ("TB")	____ days	____/____	Y N DK	Y N DK	Y N DK
Y N DK	Don't remember	Don't remember			
Influenza ("flu")	____ days	____/____	Y N DK	Y N DK	Y N DK
Y N DK	Don't remember	Don't remember			
Common cold	____ days	____/____	Y N DK	Y N DK	Y N DK
Y N DK	Don't remember	Don't remember			
Pneumonia <i>Please specify the etiology (bacteria, virus, etc.)</i> _____	____ days	____/____	Y N DK	Y N DK	Y N DK
Y N DK	Don't remember	Don't remember			
Sinusitis	____ days	____/____	Y N DK	Y N DK	Y N DK
Y N DK	Don't remember	Don't remember			
Other respiratory infection <i>(Please specify)</i> _____	____ days	____/____	Y N DK	Y N DK	Y N DK
Y N DK	Don't remember	Don't remember			
Central Nervous System Infections					
Viral meningitis <i>If known, specify the virus</i> _____	____ days	____/____	Y N DK	Y N DK	Y N DK
Y N DK	Don't remember	Don't remember			
Bacterial meningitis <i>If known, specify the bacteria</i> _____	____ days	____/____	Y N DK	Y N DK	Y N DK
Y N DK	Don't remember	Don't remember			
Fungal meningitis	____ days	____/____	Y N DK	Y N DK	Y N DK

<i>If known, specify the fungus</i> _____	Don't remember	Don't remember			
Y N DK					
Other central nervous system infection (Please specify) _____	____ days Don't remember	____/____ Don't remember	Y N DK	Y N DK	Y N DK
Y N DK					
Fever Syndromes					
Toxic Shock Syndrome	____ days Don't remember		Y N DK	Y N DK	Y N DK
Y N DK					
Bacteremia (bacteria in the blood) <i>If known, specify the bacteria</i> _____	____ days Don't remember		Y N DK	Y N DK	Y N DK
Y N DK					
Fungal infection (including Coccidioidomycosis or valley fever, Blastomycosis, Histoplasmosis, Paracoccidioidomycosis, Sporotrichosis, etc.)	____ days Don't remember		Y N DK	Y N DK	Y N DK
Y N DK					
Mononucleosis ("mono")	____ days Don't remember		Y N DK	Y N DK	Y N DK
Y N DK					
Measles	____ days Don't remember		Y N DK	Y N DK	Y N DK
Y N DK					
Mumps	____ days		Y N DK	Y N DK	Y N DK
Y N DK					

	Don't remember				
Chickenpox (<i>Varicella</i>)	_____ days		Y N DK	Y N DK	Y N DK
Y N DK	Don't remember				
Skin Infections					
Myiasis ("bot fly," "tumbu fly," or other fly larvae under the skin)	_____ days		Y N DK	Y N DK	Y N DK
Y N DK	Don't remember				
Scabies	_____ days		Y N DK	Y N DK	Y N DK
Y N DK	Don't remember				
Body lice	_____ days		Y N DK	Y N DK	Y N DK
Y N DK	Don't remember				
Cutaneous larva migrans ("ground itch" or "creeping eruption")	_____ days		Y N DK	Y N DK	Y N DK
Y N DK	Don't remember				
Other skin disease (Please specify) _____	_____ days		Y N DK	Y N DK	Y N DK
Y N DK	Don't remember				

37. Please provide any additional details that you remember and feel comfortable disclosing regarding the above illnesses.

Illness Name	Additional Details
1.	
2.	
3.	
4.	
5.	
6.	
7.	

8.	
9.	
10.	

38. Were you told at any time when you were abroad that you were infected with a bacteria that was resistant to antibiotics?

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

Non-infectious Health-related Events While Abroad

39. Please indicate if you experienced any of the following (non-infectious) health-related events while you were studying abroad.

If yes, please also list the month the health-related even occurred in, if you were hospitalized, and any additional dates if you the events occurred more than once.

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Please note that some questions may be sensitive in nature, but you have the option to choose "I would rather not answer" if you do not want to respond for personal reasons.

Non-infectious Health-related Event (Yes/No/Don't Know)	Hospitalized (Yes/No/Don't Know)	Did this occur more than once? (Yes/No/Don't Know)
Animal or Marine Stings or Bites		
Dog or cat bite Y N DK	Y N DK	
Monkey bite Y N DK	Y N DK	
Snake bite Y N DK	Y N DK	
Insect bite or sting (e.g., mosquito, tick) Y N DK	Y N DK	

Marine sting (e.g., stingray, jellyfish) Y N DK	Y N DK	
Other bite or sting (e.g., scorpion, etc.) (Please specify) _____ Y N DK	Y N DK	
Accidents and Injuries		
Occupant or driver of a vehicle (car, motorcycle, bus, bike, etc.) involved in an accident Y N DK	Y N DK	Y N DK
Pedestrian accident (in which you were the pedestrian hit by a car, bike, bus, etc.) Y N DK	Y N DK	Y N DK
Experienced a fall Y N DK	Y N DK	Y N DK
Other accident or injury (Please specify) _____ Y N DK	Y N DK	Y N DK
Crimes		
Victim of a violent crime (including assault, sexual assault, mugging, car jacking, etc.) Y N DK	Y N DK	Y N DK
Other crime (Please specify) _____ Y N DK	Y N DK	Y N DK

Travel (Movement)-related Conditions		
Motion sickness (including sea sickness)	Y N DK	
Y N DK		
Deep vein thrombosis (DVT) or clot	Y N DK	
Y N DK		
Jet lag	Y N DK	
Y N DK		
Environmental Hazards		
Heat exhaustion	Y N DK	
Y N DK		
Heatstroke	Y N DK	
Y N DK		
Frostbite	Y N DK	
Y N DK		
Air pollution (causing asthma)	Y N DK	
Y N DK		
Other environmental hazard (Please specify) _____	Y N DK	
Y N DK		
Altitude-related Conditions		
Altitude sickness	Y N DK	
Y N DK		
High Altitude Cerebral Edema (HACE)	Y N DK	
Y N DK		
High Altitude Pulmonary Edema (HAPE)	Y N DK	

Y N DK		
Water-related Conditions		
Decompression sickness ("the bends") from scuba diving Y N DK	Y N DK	
Other water-related condition (Please specify) _____ Y N DK	Y N DK	
Allergic Reactions		
Mild swelling of any part of the body Y N DK	Y N DK	
Hives Y N DK	Y N DK	
Anaphylaxis or severe allergic reaction involving your breathing Y N DK	Y N DK	

Mental Health-related Events

Please answer the following questions regarding mental health conditions.

Indicate 'yes' if you have: a history of any of the specific mental health conditions listed PRIOR TO going abroad, WHILE abroad, OR AFTER RETURNING HOME from studying abroad.

Indicate 'no' only if you have NEVER had the mental health condition.

As a reminder, all responses are anonymous and confidential. Your responses will only be used for the purposes outlined for this study. Your college/university will not have access to your responses.

Please note that some questions may be sensitive in nature, but you have the option to choose "I would rather not answer" if you do not want to respond for personal reasons.

Depression	Y N DK I would rather not answer
Stress	Y N DK I would rather not answer
Generalized anxiety	Y N DK I would rather not answer
Panic attack (severe anxiety)	Y N DK I would rather not answer
Bipolar disorder with either manic or depressive symptoms	Y N DK I would rather not answer
Psychosis (or psychotic behaviors)	Y N DK I would rather not answer
Schizophrenia (or related illness)	Y N DK I would rather not answer
Post-traumatic stress disorder (PTSD)	Y N DK I would rather not answer
Other mental health condition (Please specify)_____	Y N DK I would rather not answer

If yes, to any of the above questions:

40. When were you first diagnosed with [mental health condition]?

- a. Before study abroad trip
- b. During study abroad trip
- c. After study abroad trip
- d. Don't know
- e. I would rather not answer

41. Did you have any active [mental health condition] issues in the 3 months before you studied abroad? This would include worse episodes than usual, medication change or dose change, etc.

- a. Yes
- b. No
- c. Don't know
- d. I would rather not answer

42. Would you say that during your study abroad experience, your [mental health condition]:

- a. Got worse (*i.e.*, increased episodes, more severe episodes, increase in medication dose, etc.)
 - b. Stayed the same (*i.e.*, no changes to medication, no new episodes, no need to seek additional care, etc.)
 - c. Improved (*i.e.*, decrease in episodes, less severe episodes, decrease in medication dose, etc.)
 - d. Don't know
 - e. I would rather not answer
- 43.** Who first diagnosed your [mental health condition]?
- a. Healthcare provider
 - b. Self-diagnosis
 - c. Don't know
 - d. I would rather not answer
- 44.** Do you take medication for your [mental health condition]?
- a. Yes
 - b. No (*Please skip to question 46*)
 - c. Don't know (*Please skip to question 46*)
 - d. I would rather not answer (*Please skip to question 46*)
- 45.** Did you take your medication(s) for your [mental health condition] as prescribed while studying abroad?
- a. Yes
 - b. No
 - c. Don't know
 - d. I would rather not answer
- 46.** Have you been hospitalized for your [mental health condition] before, during, or after your study abroad experience? *Please select all that apply.*
- a. Yes, before
 - b. Yes, during
 - c. Yes, after
 - d. No
 - e. Don't know
 - f. I would rather not answer
- 47.** In your opinion, did you receive adequate support (mental health resources, counseling, etc.) from any of the following BEFORE, DURING, or AFTER your study abroad trip for your [mental health condition]? *Please select all that apply.*
- a. Yes, I received adequate support from my home college/university
 - b. Yes, I received adequate support from my study abroad college/university
 - c. No, I did not receive any support from colleges/universities
 - d. Don't know
 - e. I would rather not answer

Substance Use Questions

Please note that some of the following questions may be sensitive in nature, but you have the option to choose "I would rather not answer" if you do not want to respond for personal reasons. As a reminder, all responses are anonymous and confidential. Your responses will only be used for the purposes outlined for this study. Your college/university will not have access to your responses.

48. Did you drink alcohol while studying abroad?

- a. Yes
- b. No (*Please skip to question 55*)
- c. Don't know
- d. I would rather not answer

49. Did you drink less alcohol, the same amount of alcohol, or more alcohol than you do when you are not studying abroad?

- a. I drank less alcohol while I was studying abroad compared to not studying abroad
- b. I drank the same amount of alcohol while I was abroad that I drink when not studying abroad
- c. I drank more alcohol while I was studying abroad compared to not studying abroad
- d. Don't know
- e. I would rather not answer

50. On average, how many drinks did you have a week while studying abroad? Per the Centers for Disease Control and Prevention, a drink is defined as 12 ounces of beer, 8 ounces of malt liquor, 5 ounces of wine, or 1.5 ounces of 80-proof distilled spirits or liquor.

- a. 1 to 5 drinks
- b. 6 to 10 drinks
- c. 11 to 15 drinks
- d. 16 to 20 drinks
- e. 21 to 25 drinks
- f. 26 to 30 drinks
- g. Greater than 30 drinks
- h. Don't know
- i. I would rather not answer

51. While abroad, did you engage in any binge drinking?

Per the Centers for Disease Control and Prevention, binge drinking is defined as 5 or more alcoholic beverages for males or 4 or more alcoholic beverages for females within a couple hours.

- a. Yes
- b. No (*Please skip to question 53*)
- c. Don't know (*Please skip to question 53*)

- d. I would rather not answer

52. How often did you binge drink while abroad?

- a. Daily
- b. 2 to 3 days a week
- c. Once a week
- d. 2 to 3 times a month
- e. Once a month
- f. Once every 2 to 3 months
- g. Don't know
- h. I would rather not answer

53. Did alcohol contribute to any crimes, motor vehicle, pedestrian, or bicycle accidents?

- a. Yes (*Please describe:*
_____)
- b. No
- c. Don't know
- d. I would rather not answer

54. Did alcohol affect any mental health conditions, such as depression, anxiety, mania, or psychosis?

- a. Yes (*Please describe:*
_____)
- b. No
- c. Don't know
- d. I did not have any psychiatric conditions while studying abroad
- e. I would rather not answer

55. Did you consume any of the following illicit drugs while abroad? Check all that apply.

- a. Marijuana (pot, grass, ganja, weed, mary jane, reefer, blunt, herb, joint)
- b. Hashish (hash, hemp)
- c. Synthetic cannabinoids (K2, spice, fake weed, moon rocks)
- d. Cocaine (crack, rocks, coke, blow, snow, powder, bump)
- e. Mushrooms (shrooms, happies, magics)
- f. Ecstasy (MDMA, molly, "head shaking pill", "X", "E", uppers)
- g. LSD (acid)
- h. PCP (angel dust)
- i. Heroin (brown sugar, china white, dope, smack, tar)
- j. Methamphetamine (speed, crank, meth, crystal, crystal meth, ice, tina)
- k. Oxycontin (oxycodone, oxycet, oxy, percs, roxy)
- l. Ketamine (special K, "K", vitamin K, cat valium, purple)
- m. Other painkillers (codeine, fentanyl, hydrocodone, hydromorphone or dilaudid, Demerol, methadone, morphine)
- n. Inhalants (dusters, huff, snappers, poppers)
- o. Other (*Please specify*) _____
- p. Don't know

- q. I did not consume any drugs while abroad (*Please skip to question 50*)
 - r. I would rather not answer
- 56. Did you take fewer illicit drugs, the same amount of illicit drugs, or more illicit drugs than you do when you are not studying abroad?**
- a. I took fewer illicit drugs while I was studying abroad compared to not studying abroad
 - b. I took the same amount of illicit drugs while I was abroad that when not studying abroad
 - c. I took more illicit drugs while I was studying abroad compared to not studying abroad
 - d. I did not take any illicit drugs while I was studying abroad
 - e. Don't know
 - f. I would rather not answer
- 57. Did you have any new sexual partners while studying abroad?**
- a. Yes
 - b. No
 - c. Don't know
 - d. I would rather not answer
- 58. Did you engage in risky sexual behaviors while studying abroad? This includes, but is not limited to having sexual encounters with strangers, having sex in exchange or money or drugs, or not using barrier protection to prevention pregnancy or sexually transmitted infections.**
- a. Yes
 - b. No
 - c. Don't know
 - d. I would rather not answer
- 59. Did you engage in more risky sexual behaviors, the same amount of risky sexual behaviors, or fewer risky sexual behaviors than you do when you are not studying abroad?**
- a. I engaged in fewer risky sexual behaviors while I was studying abroad compared to not studying abroad
 - b. I engaged in the same amount of risky sexual behaviors while I was abroad that when not studying abroad
 - c. I engaged in more risky sexual behaviors while I was studying abroad compared to not studying abroad
 - d. I did not engage in risky sexual behaviors before or during studying abroad
 - e. Don't know
 - f. I would rather not answer
- 60. Did you (or your partner) use a condom during ALL sexual encounters while studying abroad?**
- a. Yes (*Please skip to question 62*)
 - b. No
 - c. Don't know (*Please skip to question 62*)
 - d. I would rather not answer (*Please skip to question 62*)
 - e. I did not have any sexual encounters while studying abroad (*Please skip to question 62*)

61. What percent of the time did you use condoms while studying abroad?

- a. 0% of the time
- b. 1–25% of the time
- c. 26–50% of the time
- d. 51–75% of the time
- e. 76–99% of the time
- f. Don't know
- g. I would rather not answer

62. While abroad, did you or your partner use any other form of birth control *other than* condoms?

- a. Yes
- b. No (*Please skip to question 64*)
- c. Don't know (*Please skip to question 64*)
- d. I would rather not answer (*Please skip to question 64*)

63. Which of the following did you or your partner use? Select all that apply.

- a. Birth control pill, patch, or injection (*e.g.*, Depo)
- b. Emergency contraception (morning after pill)
- c. Intrauterine device (IUD) (*e.g.*, Mirena)
- d. Diaphragm
- e. Spermicide
- f. Cervical cap or sponge
- g. Vasectomy or tubal ligation ("tubes tied")
- h. Contraceptive implant (*e.g.*, Nexplanon)
- i. None of the above
- j. Don't know
- k. I would rather not answer

64. Did you have any other non-infectious health related issues while studying abroad that were not mentioned above?

- a. Yes (*Please specify*) _____
- b. No
- c. Don't know
- d. I would rather not answer

65. Please provide any additional comments or information regarding any of the above questions here:

This survey is now completed.

Thank you very much for your time.