

REPORT OF KNOWLEDGE ATTITUDE & PRACTICE (KAP) SURVEY, IDIROKO, IPOKIA LGA, OGUN STATE

EPIAFRIC

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1.0 INTRODUCTION

The CDC-funded project- Integrated Response to Public Health Emergencies in Nigeria (IRPHEN) aims to strengthen public health systems at Nigerian borders otherwise called "Points of Entry". Pro Health International with her partners will be working to support authorities and responsible agencies and border communities prevent, detect and respond to Public Health Emergencies of International Concern (PHEIC), including Ebola Virus Disease.

2.0 OBJECTIVES

The objective of this Knowledge, Attitude and Practice (KAP) survey is to gain an appreciation of community profile(s), structures and interactions within Ipokia local government area and its environs towards the identification, prevention and control of infectious diseases.

3.0 STUDY DESIGN AND METHODS

The KAP survey questionnaire was designed in consultation with Pro Health International. Respondents were chosen via purposive sampling. Respondents had to be residents of border or near-border communities who have resided in these communities. Questionnaire administration took place over a period of four days. Questionnaires were either self or enumerator administered depending on the choice of the respondents. Fourteen field enumerators were trained and deployed to near-border communities in Idioroko to administer questionnaires. Respondents were recruited from the market places, motor parks, places of worship, and roadside shops. At the end of each day's exercise, EpiAfric consultants debriefed field enumerators to learn what worked and what didn't work. This helped the team prepare enumerators to perform better in subsequent days.

4.0 SETTING

Idiroko is one of the 15 towns in Ipokia Local Government Area of Ogun State ¹. Idiroko has an estimated population of 7,500 and lies 76km from Lagos. It is located at latitude: 6.6333 (637'59.988"N), longitude: 2.7333 (243'59.988"E) and altitude of 75m². It is an international border town to Benin Republic. A major challenge in the border area is its "porous" nature with a lot of movement taking place across the border in both directions. An online publication described the border as "having many entry and exit points"³.

¹ Ipokia. Available at https://en.wikipedia.org/wiki/Ipokia [accessed on February 22 2016]

² City (town): Idiroko: map, population, location. Available from http://www.tiptopglobe.com/city?n=Idiroko&p=7487 [accessed on February 22 2016]

³ Idiroko: One border, many exits. Available at http://www.vanguardngr.com/2012/09/idiroko-one-border-many-exits/ [accessed on February 22 2016]

5.0 RESULTS

A total of 397 questionnaires were administered for the KAP survey at Idiroko; of these 89 were self-administered while 308 were enumerator administered. The instruction for Q9 (Have you heard of infectious diseases) in the questionnaire was to end the survey if the answer to it [No]. Twenty-seven respondents answered [No] to Q9. Therefore, analysis from Q11 is based on answers from 370 respondents.

Self-administered surveys

	Frequency	Percent
No	308	77.58
Yes	89	22.42
Total	397	100

Notes

- 1. 89 surveys were self-administered
- 2. This represents 22.42% of the total (n = 397)

SOCIO-DEMOGRAPHIC CHARACTERISTICS

Age

196		
n	397	
Valid responses	379	
Missing	18	4.53% of total (n)
Mean age	35	
Median age	32	
Mode (of age)	30	
Minimum age	18	
Maximum age	85	
Range	67	

Religion

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	Frequency	Percent	Cumulative Percent
Christianity	262	66.84	66.84
Islam	128	32.65	99.49
Traditional	1	0.26	99.74
Others (please specify)	1	0.26	100
Total	392	100	

Notes

- 1. Valid responses = 392 (n = 397)
- 2. The one respondent that chose "others" belonged to Jehovah's Witness Majority of the respondents (99%) are religious.

Gender

	Frequency	Percent	Cumulative Percent
Male	156	40	40
Female	234	60	100
Total	390	100	

Notes

- 1. Valid responses = 390 (n = 397)
- 2. Missing value = 7

Sixty (60%) of the respondents were females.

Q5 - How long have you and your family been living in Ipokia?

	Frequency	Percent	Cumulative Percent
less than 1 month	3	0.77	0.77
1 month - 6 months	16	4.11	4.88
7 months - 12 months	19	4.88	9.77
over a year	351	90.23	100
Total	389	100	

Notes

1. Valid responses = 389 (n = 397)

From the table above, majority of the community members have lived in Ipokia for over a year.

Q6 - Marital status

	Frequency	Percent	Cumulative Percent
single/never married	155	39.74	39.74
legally married and living with spouse/husband	206	52.82	92.56
married but separated by work	16	4.1	96.67
Cohabiting	5	1.28	97.95
Separated	4	1.03	98.97
Divorced	1	0.26	99.23
Widowed	3	0.77	100
Total	390	100	

Notes

1. Valid responses = 390 (n = 397)

53% of the respondents are legally married while 40% are single.

Q7 - What is the highest education level completed?

	Frequency	Percent	Cumulative Percent
no formal education	10	2.62	2.62
primary school education	48	12.57	15.18
secondary school education	166	43.46	58.64
university (bachelors/masters/doctor)	83	21.73	80.37
others (specify)	69	18.06	98.43
no response	6	1.57	100
Total	382	100	

Notes

- 1. Valid responses = 376 (n = 397)
- 2. 69 respondents chose others (specify) see Table below

Forty-four percent of respondents completed secondary school education, 22% are university graduates and 13% have primary school education. Therefore, 66% have at least secondary education.

Follow up to Q7 - People that chose *others* on Q7

	Frequencies	Percent	Cumulative Percent
DIPLOMA	3	3.0	1.45
ENGINEER	1	1.45	5.8
FASHION DESIGNER	1	1.45	7.25
GRADE II	1	1.45	8.7
H.N.D	2	2.9	11.59
HND	4	5.8	17.39
N.C.E	7	10.14	27.54
N.D	7	10.14	37.68
NCE	16	23.19	60.87
ND	5	7.25	68.12
National Diploma (ND)	1	1.45	69.57
O.N.D	3	4.35	73.91
OND	13	18.84	92.75
P.G.B	1	1.45	94.2
SCHOOL OF HEALTH	1	1.45	95.65
Teachers grade II	1	1.45	97.1
Undergraduate	1	1.45	98.55
Standard six	1	1.45	100
Total	69	100	

From the respondents that chose 'Others' in the previous question on highest educational level, 23% have an NCE, 23% also have an OND, 33% have an NCE, 9% have a HND, while 8.7% have an ND.

Q8 - What kind of work (main occupation) do you currently do?

	Frequency	Percent	Cumulative Percent
unemployed	13	3.35	3.35
private business (except petty trader)	129	33.25	36.6
artisan	31	7.99	44.59
petty trader	68	17.53	62.11
farmer	4	1.03	63.14
teacher/lecturer/instructor	72	18.56	81.7
public transportation driver (taxi, bus)	2	0.52	82.22
commercial motorcyclist	2	0.52	82.73
medical or health professional	3	0.77	83.51
other government employees (not stated	16	4.12	87.63
student	26	6.7	94.33
others (specify)	22	5.67	100

Total 388 100

Notes

- 1. Valid responses = 388 (n = 397)
- 2. 22 respondents chose others (specify) see Table below

Most of the respondents are traders (33%), followed by teacher/tutors (19%). Only a small population (3%) are unemployed. Findings from focus group discussions held with groups in Idiroko revealed a preponderance of professional associations in the community.

Follow up to Q8 - People that chose others on Q8

	Frequency	Percent	Cumulative Percent
agent	3	13.64	13.64
architect	1	4.55	18.18
banker	1	4.55	22.73
car agent	2	9.09	31.82
caterer	1	4.55	36.36
catering service	1	4.55	40.91
customs agent	1	4.55	45.45
petty trader & teacher/lecturer/instructor	1	4.55	50
pharmacy attendant	1	4.55	54.55
printing press	1	4.55	59.09
publicservant	2	9.09	68.18
retired police officer	1	4.55	72.73
retiree	3	13.64	86.36
tailor	2	9.09	95.45
technician	1	4.55	100
Total	22	100	

From the respondents that chose 'Others' in the previous question on employment status, 14% of them are retirees.

AWARENESS AND KNOWLEDGE OF CAUSES, SIGNS, SYMPTOMS & TRANSMISSION

Q9 - Have you ever heard or learnt of infectious diseases before (prior to this interview)

	Frequency	Percent	Cumulative Percent
no	21	5.29	5.29
yes	370	93.2	98.49
missing questionnaire	2	0.5	98.99
missing value	4	1.01	100
Total	397	100	

Notes

- 1. The instruction for Q9 If selected [No], end the survey
- 2. Respondents that marked yes = 370
- 3. The remaining analyses will be based on 370 (that marked yes on Q9)

A majority of the respondents (93%) have heard or learnt of infectious diseases prior to the interview. However, 5% have not heard about infectious diseases.

Q11 - What causes infectious diseases

Question	Frequency	Percent
Q11a (Bacteria)	214	53.9
Q11b (Bats / Monkeys / Chimpanzees / Other wild animals)	180	45.3
Q11c (Curse)	26	6.5
Q11d (Evil doing)	38	9.6
Q11e (God or higher powers)	35	8.8
Q11f (Witchcraft)	52	13.1
Q11g (Virus)	192	48.4
Q11h (Others Specify)	3	0.8
Q11i (I don't know/not sure)	20	5.0
Q11j (No response)	6	1.5

From the table above, 54% of the respondents say that infectious diseases are caused by bacteria, closely followed by 48% who say they are caused by virus. However, 38% say that they are caused by evil doing, witchcraft, curse, God or higher powers.

Q12 - How does a person get an infectious disease e.g. Ebola or Polio

Question	Frequency	Percent
Q12a (By air)	135	34.0
Q12b (Preparing or eating bush meat)	162	40.8
Q12c (Eating fruits likely to have been bitten by bats)	175	44.1
Q12d (Physical contact with an infected person)	179	45.1
Q12e (Person)	15	3.8
Q12f (God's will)	31	7.8
Q12g (Witchcraft)	37	9.3
Q12h (an infectious disease has touched)	101	25.4
Q12i (sex with an infected person)	183	46.1
Q12j (Going to the hospital/health facility)	83	20.9
Q12k (I don't' know/not sure)	14	3.5
Q12l (No response)	2	0.5
Q12m (Others specify)	6	1.5

For the question on how infectious diseases can be contracted, multiple answers were allowed. From the table above, the largest proportion of people (46% of the respondents) believe that infectious diseases are contracted through sex with an infected person. This may be related to the perception of some respondents that there are quite a number of commercial sex workers at Idiroko. This is closely followed by the 45% who believe infectious diseases can be contacted through physical contact. Twenty-one percent of respondents believe that infectious diseases can be contracted by visiting the hospital.

Q13 - Which of these are signs or symptoms of an infectious disease

Question	Frequency	Percent
Q13a (Any fever)	113	28.5
Q13b (Sudden onset of high fever)	157	39.5
Q13c (Severe headache)	179	45.1
Q13d (Muscle pain)	122	30.7
Q13e (Weakness)	183	46.1
Q13f (Diarrhoea with or without blood)	158	39.8
Q13g (Vomiting with or without blood)	199	50.1
Q13h (Stomach pain)	112	28.2
Q13i (Lack of appetite)	118	29.7
Q13j (Sore throat)	89	22.4
Q13k (Rash)	149	37.5
Q13I (Difficulty breathing)	83	20.9
Q13m (Bleeding – internal or external)	107	27.0
Q13n (Hiccups)	17	4.3
Q13o (Delirium/confusion)	17	4.3
Q13p (Others specify)	2	0.5
Q13q (I don't know/not sure)	20	5.0
Q13r (No response)	3	0.8

Fifty percent of the respondents believe that vomiting is a symptom of an infectious disease. This is followed closely by 46% who say weakness is a sign.

Q14 - Can one prevent themselves from getting infectious diseases by avoiding mosquito bites?

	Frequency	Percent	Cumulative Frequency
yes	250	67.2	67.2
no	95	25.54	92.74
I don't know/not sure	24	6.45	99.19
no response	3	0.81	100
Total	372	100	

Sixty-seven percent of the respondents believe that infectious diseases can be prevented by avoiding mosquito bites.

Q16 - One can prevent themselves from getting Ebola by avoiding funeral or burial rituals that require handling the body of someone who has died from Ebola?

	Frequency	Percent	Cumulative Frequency
Yes	253	70.47	70.47
No	81	22.56	93.04
I don't know/not sure	23	6.41	99.44
no response	2	0.56	100
Total	359	100	

Majority of the respondents (70%) are aware that they can prevent themselves from getting Ebola by avoiding funeral rituals that require handling the body of someone who has died from Ebola.

Almost of a third (29%) of the respondents are not aware.

RISK PERCEPTION AND BELIEFS

Q17 - Should a person showing any of the symptoms you know of infectious diseases be taken to a health facility?

	Frequency	Percent	Cumulative Frequency
Yes	328	89.62	89.62
No	13	3.55	93.17
It depends on the symptom	2	0.55	100
I don't know/not sure			
Total	366	100	

Of the respondents, 90% agree that a person showing any of the symptoms of infectious diseases should be taken to a health facility.

Q18 - Should a person suspected of an infectious disease be isolated (kept in house or confined place) from others?

	Frequency	Percent	Cumulative Frequency
Yes	209	57.26	57.26
No	106	29.04	86.3
It depends on the symptom	45	12.33	98.63
I don't know/not sure	4	1.1	99.73
no response	1	0.27	100
Total	365	100	

Of respondents, 57% believe that a person suspected of an infectious disease should be isolated from others.

Q20 - Who do you believe is the most influential in stopping the spread of infectious diseases?

Question	Frequency	Percent
Q20a (The community)	112	28.2
Q20b (The government/ Health Ministry/ LGA health team)	307	77.3
Q20c (Local organisations)	72	18.1
Q20d (Religious leaders)	94	23.7
Q20e (International NGOs)	96	24.2
Q20f (Spiritual healers)	43	10.8
Q20g (Traditional healers)	61	15.4
Q20h (Chiefs & Elders/Traditional Leaders)	42	10.6
Q20i (Only God)	120	30.2
Q20j (Others specify)	8	2.0
Q20k (No response)	0	0.0

Of the respondents, 77% believe that the government/health ministry is the most influential institution in stopping the spread of infections.

Q21 - Do you believe that traditional healers can cure or treat infectious diseases?

	Frequency	Percent	Cumulative Frequency
Yes	141	38.01	38.01
No	172	46.36	84.37
I don't know/not sure	54	14.56	98.92

no response	4	1.08	100
Total	371	100	

Of the respondents, 46% think that traditional healers cannot cure or treat infectious diseases. On the other hand, 38% believe that infectious diseases can be cured by traditional healers.

Q22 - Do you believe that spiritual healers can cure or treat infectious diseases?

	Frequency	Percent	Cumulative Frequency
Yes	126	36.1	36.1
No	173	49.57	85.67
I don't know/not sure	46	13.18	98.85
no response	4	1.15	100
Total	349	100	

Of respondents, 36% believe that spiritual healers can cure or treat infectious diseases while 51% do not believe.

Q23 - Do you believe that the land crossing at Ipokia should be closed if there is any outbreak of an infectious disease in neighbouring countries?

	Frequency	Percent	Cumulative Frequency
Yes	187	52.53	52.53
No	162	45.51	98.03
I don't know/not sure	6	1.69	99.72
no response	1	0.28	100
Total	356	100	

Of the population, 53% agree that land crossing at Ipokia should be closed if there is any outbreak in neighbouring countries. However, 46% of them disagree.

Q24 - Do you believe that in the event of another major outbreak of an infectious disease like Ebola, the existing health structure can manage the required response that will keep the community safe?

	Frequency	Percent	Cumulative Frequency
Yes	191	52.76	52.76
No	140	38.67	91.44
I don't know/not sure	29	8.01	99.45
no response	2	0.55	100
Total	362	100	

About 53% of respondents believe that the existing health structure can manage an incidence of another major disease outbreak like Ebola. The other 39% do not.

BEHAVIOURS AND PRACTICES

Q25 - What actions do you take to avoid being infected or transmitting germs?

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Question	Frequency	Percent
Q25a (I wash my hands with soap and water more often)	297	74.8

Q25b (I wash my hands with just water more often)	69	17.4
Q25c (I clean my hands with other disinfectants more often)	198	49.9
Q25d (I chew bittercola or drink its juice (bittercola drink))	76	19.1
Q25e (I drink a lot of water / juice)	103	25.9
Q25f (I drink traditional herbs)	129	32.5
Q25g (I take antibiotics (e.g. penicillin, amoxicillin))	156	39.3
Q25h (I avoid physical contact with anyone that appears unwell)	118	29.7
Q25i (I don't do anything out of the ordinary)	27	6.8
Q25j (Others specify)	6	1.5
Q25k (No response)	0	0.0

Seventy-five percent of respondents wash their hands with soap and water often to avoid being infected by germs. However, 33% say that they drink traditional herbs to avoid germs.

Q26 - If you had a fever would you go to a health facility?

	Frequency	Percent	Cumulative Frequency
yes	331	90.44	90.44
no	30	8.2	98.63
I don't know/not sure	5	1.37	100
Total	366	100	

Ninety percent of respondents would go to a health facility if they have fever while 8.2% said they wouldn't.

Q27 - If 'Yes', how would you travel to the health facility?

Question	Frequency	Percent
Q27a (Walking)	77	19.4
Q27b (Bicycle)	21	5.3
Q27c (Motorbike)	179	45.1
Q27d (Private car)	102	25.7
Q27e (Publictransport)	34	8.6
Q27f (Others, specify)	3	0.8
Q27g (No response)	7	1.8

Of the respondents 45% said that they would travel to the health facility with the use of a motorbike. On the other hand, 19% said that they would walk.

Q28 - 'No', why not?

Question	Frequency	Percent
Q28a (I have no money / can't afford to pay)	8	2.0
Q28b (I believe the hospital is a contaminated space)	14	3.5
Q28c (I prefer to go to a nearby pharmacy instead)	13	3.3
Q28d (I prefer to go to a traditional healer)	11	2.8
Q28e (I prefer to go to a spiritual healer)	4	1.0
Q28f (Others, specify)	0	0.0

Q28g (No response) 10 2.5

From the respondents who answered No to whether they would visit a health facility if they had a fever, 3.5% said their reason was because they believe the hospital is a "contaminated" space.

Q29 - If you had a fever, how long would you wait before going to a health facility?

	Frequency	Percent	Cumulative Frequency
immediately	155	43.79	43.79
one - two days	142	40.11	83.9
three - four days	47	13.28	97.18
five - six days	6	1.69	98.87
one week or more	2	0.56	99.44
I don't know/not sure	2	0.56	100
Total	354	100	

A majority of the respondents (97%) would visit the hospital within at least two days of discovering they have a fever.

Q30 - Do you know who to contact in the community or the number to call to report a suspected Ebola case or ask questions about Ebola

	Frequency	Percent	Cumulative Frequency
Yes	123	33.61	33.61
No	229	62.57	96.17
I don't know/not sure	12	3.28	99.45
no response	2	0.55	100
Total	366	100	

About 63% of the respondents do not know who to contact to report a suspected case of Ebola to ask questions. Only 34% are aware of the numbers to call.

INFORMATION CHANNELS, NETWORKS AND SOURCES

Q31 - Through what ways would you prefer to get information on infectious diseases?

Question	Frequency	Percent
Q31a (Radio)	309	77.8
Q31b (Television)	268	67.5
Q31c (Megaphone public announcements/Town criers)	114	28.7
Q31d (Megaphone public announcements/ Town criers)	137	34.5
Q31e (Church / Mosque / other religious venues)	140	35.3
Q31f (Other community meetings)	71	17.9
Q31g (Relatives / Friends / Neighbours / Community members)	108	27.2
Q31h (Other print materials)	91	22.9
Q31i (Facebook)	141	35.5
Q31j (Traditional/Community leaders)	74	18.6
Q31k (Local government team)	124	31.2
Q31I (Mobile phone / text messages)	123	31.0
Q31m (Others specify)	3	0.8

Q31n (I don't know/not sure)	0	0.0
Q31o (No response)	0	0.0

Of the respondents, 78% chose radio, television (67.5) and Facebook (35.5%) as preferred sources of information on infectious diseases.

Q32 - Who do you trust to give you reliable health information?

Question	Frequency	Percent
Q32a (No one)	21	5.3
Q32b (Government / Ministry of Health and Social Welfare)	266	67.0
Q32c (The media)	133	33.5
Q32d (Health and medical professionals)	234	58.9
Q32e (Relatives and friends)	75	18.9
Q32f (Religious leaders (e.g. pastor, Imam))	81	20.4
Q32g (Spiritual healers)	33	8.3
Q32h (Traditional healers)	37	9.3
Q32i (Health workers that go from house to house)	114	28.7
Q32j (Others, specify)	7	1.8
Q32k (I don't know/not sure)	0	0.0
Q32l (No response)	3	0.8

Most respondents (67%) trust the government/ministry of health to give reliable health information to them and 59% trust the health and medical professionals.

6.0 DISCUSSION

Most of respondents in this survey are females, married, Christians and have lived in Idiroko for more than a year. The average age of respondents was 35 years. Most respondents had completed secondary school and are therefore literate. Petty trading is the commonest occupation in Idiroko.

A large proportion of the respondents had heard of infectious disease prior to the survey. Bacteria and virus are the commonest causes of infectious diseases mentioned by respondents. However, a significant proportion of respondents ascribe causation of infectious diseases to God, the devil, witchcraft and other supernatural causes.

There appears to be a high concentration of commercial workers in Idiroko. This is not unexpected considering its international border status. Many respondents consider sexual intercourse as the most common way through which infectious diseases are spread. Vomiting was stated as the commonest symptom of infectious disease, weakness as a symptom was the next common.

Almost 7 in 10 respondents believe that infectious diseases can be prevented by avoiding mosquito bites. This knowledge is quite significant in the wake of Zika virus. Already, the World Health Organisation (WHO) has declared the cluster of neurological syndromes with a likely association with the Zika virus as a Public Health Emergency of International Concern (PHEIC)⁴. There is a high awareness of Ebola as a major infectious disease. Most respondents are aware that they can prevent

http://www.who.int/mediacentre/news/statements/2016/1st-emergency-committee-zika/en/ [accessed on March 03 2016]

⁴ WHO statement on the first meeting of the International Health Regulations (2005) (IHR 2005) Emergency Committee on Zika virus and observed increase in neurological disorders and neonatal malformations. Available from

themselves from getting Ebola by avoiding funeral rituals that require handling the body of someone who has died from Ebola. Most respondents agree that a person showing any of the symptoms of infectious diseases should be taken to a health facility. This reveals that the community members are aware of the role of hospitals and the health system in the control of infectious diseases.

Most respondents believe that the government/ Ministry of Health is the most influential in stopping the spread of infection and trust the government/ Ministry of Health to give reliable health information to them. Community members believe in the role of the government. Therefore, the government should be a major vehicle for this intervention. However, 30% of the respondents believe only God can stop the spread of infectious diseases. This reveals that they still think that diseases have supernatural causes and cures. This suggests that religious leaders need to be educated and could then play a great role in passing health information across.

Most respondents believe that a person suspected of an infectious disease should be isolated (kept in house or confined place) from others. Perhaps the question should have included "informing health authorities following isolation of the infected person".

Almost 4 in 10 respondents believe that infectious diseases can be cured by traditional healers, while about 5 in 10 respondents believe that infectious diseases can be cured by spiritual healers. Most respondents agree that land crossing at Ipokia should be closed if there is any outbreak in neighbouring countries. Findings from focus group discussions held with some community groups at Ipokia revealed the lax nature of the border crossing and presence of other crossings that are not manned by security forces. Closing the official land crossing at Ipokia would not make much impact during disease outbreaks. There is confidence in the local government health system to handle an outbreak of infectious disease.

Frequent hand washing with soap and water is the commonest way respondents prevent themsel ves from being infected by germs. Nine out of 10 respondents visit health centres in the event of a fever and would do so within the first two days. Most of respondents travel to these facilities with the use of motorbikes. This is not unexpected because commercial motorbikes, "Keke NAPEP", appear to be the commonest form of transportation in Idiroko. Despite the confidence of respondents in the health system, most of them do not know who to call in emergencies such as reporting suspected cases of Ebola.

According to respondents, the top three preferred ways of getting information on infectious diseases are radio, television and Facebook. Conversely, we found out from focus group discussions held with different community groups that the most influential way of information dissemination at Idiroko is through the palace of the traditional ruler, Kabiyesi.

7.0 CONCLUSION

Idiroko is an international border between Nigeria and the Republic of Benin. It is a very busy community and a melting pot of cultures, professions, ethnicities and businesses. The lax nature of border control at Idiroko is a risk for PHEICs. The KAP survey at Idiroko explored community awareness and knowledge of causes, signs symptoms and transmission of infectious diseases. The survey also assessed risk perceptions and beliefs of community people regarding infectious diseases and sources of health information and networks.