MINISTRY OF HEALTH UGANDA

UNIPH Epidemiological Bulletin

Volume 2| Issue 3| June 2017

Quarterly Epidemiological Bulletin of the Uganda National Institute of Public Health, Ministry of Health

April—June 2017

Dear Reader,

Welcome to the third volume of Issue 2 of the Uganda National Institute Public Health (UNIPH) Quarterly Epidemiological Bulletin.

This bulletin aims to inform the district, national, and global stakeholders on disease outbreak investigations, public health surveillance and interventions undertaken in detecting, preventing and responding to public health events in the country.

In this issue, we present updates on the Burden of Injuries due to Gender Based Violence, Investigation of increasing cases of Schistosomiasis in Oyam District, amongst other highlights and upcoming events. A policy brief on Yellow Fever vaccination to be incorporated into Routine Expanded Program on Immunization has featured in this issue as well as Evaluation of a Surveillance System in a Refugee Settlement. A rapid health assessment of refugees in the biggest camp in the world, Bidibidi in Yumbe District, was done and is documented. These investigations yielded very useful information that you ought not to miss.

In case you would like to access original references used in this issue, feel free to contact us at: ***pokello@musph.ac.ug*** **OR** **lkwagonza@musph.ac.ug**

We will appreciate any feedback regarding the content and general outlook of this issue and look forward to hearing from you. We hope this will be both an informative and enjoyable reading to you.

Thank You

Inside this issue:

Uganda Public Health Fellowship Program Excels at the 2017 Epidemic Intelligence Service Conference

The 2017 FETP International Nights was held during the 66th Annual EIS Conference in Atlanta, Georgia, USA from April 24 – 27. This event which was co-sponsored by TEPHINET and the CDC, gave FETP trainees from around the world the chance to present their work to a global audience of public health practitioners. International Night was a golden chance to share work done by Field Epidemiology Training Programs around the world and to recognize the contribution of these programs in addressing public health needs in their countries. The event provided a forum for FETP residents and graduates to give scientific presentations and increase their knowledge about surveillance, outbreak investigation, and how to improve health outcomes in their respective countries. The interaction with EIS officers led to exchange of ideas and also provided opportunity for expansion of the global network of disease detectives who can be called upon in times of emergency. Uganda Public Health Fellowship Program aka Advanced FETP, made oral and oral poster presentations during this conference. The most glorious moment however, came when Uganda Public Health fellowship Program won the prestigious CDC Director's award for being the best executed and results driven program in the year 2016 out of the over 70 Field Epidemiology Training Programs worldwide. This is a clear testimony of the tremendous contribution this program has made to propel the Ministry of Health in preventing, detecting and responding to public health events in the recent past.

The CDC Resident Advisor, Dr. Bao-Ping Zhu, Co-Director , Dr. Alex Opio, Field Supervisor, Daniel Kadobera and a Cohort 2016 Fellow, Lydia Nakiire of Uganda Public Health Fellowship Program pose with the CDC Director's Award in Atlanta, Georgia, USA

Upcoming Events

The 7th Palliative Care Conference

The Ministry of Health is organizing the 7th Palliative Care Conference. This will be the Uganda Cancer Institute (UCI) and Palliative Care Association of Uganda (PCAU) joint conference on Cancer and Palliative Care The theme of the conference is "United Against Cancer—Prevention to End of Life Care". The conference shall take place on August 24 - 25th at Speke Resort Munyonyo, Kampala, Uganda

The 4th National Quality Improvement Conference

The Ministry of Health in collaboration with in collaboration with key stakeholders is organizing the 4th Annual National Quality Improvement Conference with the theme "Transforming Healthcare Trough Leadership Innovation and Accountability". The conference shall take place on August 29 - 31st at Serena Hotel Kampala

The 9th TEPHINET Global Scientific Conference

The 9th TEPHINET Global Scientific Conference will be held from August 7 - 11th in Chiang Mai, Thailand. Pre-conference workshops will be held on August 6. In this conference, Fellows of the Uganda Public Health Fellowship Program -Field Epidemiology Track will present 8 papers, 3 oral and 5 oral posters.

The 13th Joint Annual Scientific Health Conference

The Ministry of Health in collaboration with in collaboration with key stakeholders is organizing the 13th Joint Annual Scientific and Health Conference with the theme "National and Global Healthcare for All: The Past, Present and Future". The conference shall take place on September 27 - 29th at Hotel Africana Kampala

Uganda Cancer Institute at 50 years

Uganda Cancer Institute- the only public institution that provides comprehensive cancer treatment in Uganda has contributed tremendously to research and care of cancer patients worldwide since its inception in 1968. UCI in conjunction with Palliative Care Association in Uganda (PCAU) will jointly celebrate 50 years of existence under the conference named UCI @50. Some of the achievements include: being selected to host the regional center of excellence in oncology – The East Africa Oncology Institute, gaining autonomy to oversee Cancer control activities in Uganda among others. Through this partnership, the conference will offer an expanded scope, enriched experience and unique opportunities to discuss research and improve delivery of cancer care. The conference will provide an opportunity to showcase scientific and program work carried out by different individuals and institutions.

A Rapid Health Assessment of Bidibidi Refugee Settlement, Yumbe District, March 2017

Denis Okethwangu[1], Miriam Nakanwag[1], Benon Kwesiga[1]
[1]Public Health Fellowship Program

Summary
Since war broke out in South Sudan, there has been an influx of refugees into Uganda. Subsequently new camps, Bidibidi being one of them, were created to accommodate the numbers since the old ones had been overpopulated. This assessment sought to assess the health status of refugees in Bidibidi Refugee Settlement; identify health needs with regard to food, water, shelter and other non-food items; and assess the health services available for refugees in the camp. We employed the modified cluster sampling technique to select samples for a household survey and randomly selected 10 health facilities for the facility survey. Other data collection methods included focus group discussions, visual observation, review of secondary records and key informant interviews. We found that the emergency is not in a critical phase, but the population nutrition status is poor. Malaria is the leading cause of morbidity and mortality. We also found that there is less water and food available than is recommended. Poor food security with no coping strategy predisposes the refugee population to poverty and its antecedent effects. We recommend strengthening preventive efforts for better health outcomes, local food production to enhance food security; water extension and equitable distribution of relief items.

Introduction: Since 2013 when war broke out in South Sudan, the United Nations High Commissioner for Refugees (UNHCR) reported that over 1.5million people had fled the country. Most of these came to Uganda, consequently increasing the population of South Sudanese refugees in the country threefold, totaling about 800,000 in Uganda (1). Bidibidi Refugee Camp was opened in August, 2016 to accommodate the influx of refugees which had caused overcrowding in the pre-existing settlement camps. The settlement camp is situated in Yumbe district, West Nile sub-region. The settlement is spread across 5 sub-counties in the district, and has a population of over 272,000. Yumbe District population is estimated at 534,300 (2). Refugees in such emergency settings face enormous challenges, which often impact negatively on their health. The challenges include inadequate living space; shortage of food and clean water, which results in poor sanitation; inadequate security and integration into the host community. The sudden rise in population stresses the available resources. All these predispose refugees to a heightened risk of disease outbreaks and increased morbidity and mortality. In March, 2017 a team comprising of two Public Health Fellowship Program, Ministry of Health Fellows and a Supervisor, conducted a rapid health assessment to ascertain the health status of the refugee population; identify their health needs in regard to water, food, shelter and other non-food items; and assess availability of health services.

Methods: Using the modified cluster sampling method (3), we selected 210 households, and randomly selected 10 health facilities for the survey. We collected information using standardized questionnaires. For the household survey, we collected data on the demographics of the household head, household size, distance to water collection and food distribution points (both estimated by self-reported time taken walking from home to the respective points), time taken in a queue before they pick water, capacity of water storage container and occupation. We also collected data on ownership (and number) of mosquito nets. For the health facilities survey, we collected data on level of facility, services offered, as well as physical and financial access. We reviewed medical records for the major causes of morbidity and mortality, mortality rates and nutritional indices. Two (2) focus group discussions in each of the 5 zones with community leaders and community health workers were also conducted. Along with observation, the focus group discussions helped in triangulation of information got from the interviews. Daily food per capita was computed using NutVal 4.0.

Results: The median age of household survey respondents was 31 years (IQR: 26-41). 117 (56%) were women and 7 (3.5%) were less than 18 years of age. The median household size was 7 persons (IQR: 5-10). 44 (21%) of households had at least a pregnant woman and 117 (56%) had at least one breastfeeding mother.

We found the daily water per capita to be 3.6litres and daily food per capita was 1703 Kcal. 46 (22%) respondents reportedly walking for half an hour to a water collection; 122 (58%) reported lining up in the queue at the water source for over 30 minutes. The average water storage capacity per household is 38 litres. 136 (65%) households did not have any food stock and 136 (65%) household heads interviewed did not have any gainful employment. Observed communities had no gardens for local food production. Global acute malnutrition was at 5.6%. 28% of households did not have a mosquito net with the average mosquito net per household at 0.2 mosquito nets. All health facilities selected were level 3 facilities and they all offer outpatient department with limited inpatient services. They were all physically accessible and services were free of charge. From the Health Information System (HIS) records reviewed between October 2016 and February 2017, the leading cause of morbidity and mortality at the camp was malaria. Among children <5years, malaria contributed 19,932 (36%) of 55,574 facility visits and 25 (32%) of 78 deaths, while in the ≥5-year population it led to 47,170 (33%) of 142,089 facility visits and 14 (32%) of 44 deaths. The other causes of morbidity among children <5years were upper respira-

Continued from page 3

causes of morbidity among children <5years were upper respiratory tract infection (URTI) (12,782; 23%), watery diarrhea (8,892; 16%) and acute malnutrition (3,890; 7%). Among the ≥5-year population, the other causes of morbidity are URTI (26,997; 19%), watery diarrhea (14,209; 10%) and skin diseases (9,946; 7%). For mortality, the other causes among <5 year old children are anemia (18; 23%), acute malnutrition (7; 9%), lower respiratory tract infection (LRTI) (5; 6%) and neonatal death (5; 6%). Among those at least 5years old, the other causes are chronic diseases (8; 18%), watery diarrhea (3; 7%) and LRTI (3; 7%). Overall crude mortality rate at the camp was 0.04 per 10,000population per day. Death among children <5 was 0.7 per 10,000 population per day.

Discussion: Our findings are consistent with that from a similar study that concluded that the leading causes of morbidity and mortality in refugee settlements are malaria, acute respiratory infections, malnutrition and measles (4). The high rates of malaria in Bidibidi may be attributed to the flat terrain, which facilitates water logging, and therefore providing breeding sites for mosquitoes. Furthermore, the low percentage of mosquito net ownership may facilitate the transmission of malaria. In the focus group discussions, we also learnt that mosquito net utilization for its intended purpose was low, with men using them as building materials instead. The high incidence of malaria may also have contributed to anemia among children, though intestinal worms may have played a role too. Acute malnutrition prevalence may be attributed to irregular supply of food and in insufficient quantities; according to Brennan (5), food scarcity and underlying illnesses e.g. diarrhea, may be causative factors. Moreover, without gainful employment and gardens, majority of the refugee community is very food insecure, with no clear coping strategy. This may predispose them to starvation and other related dangers. Haile (6) emphasizes the importance of humanitarian food relief in the absence of such coping mechanism, especially in helping them manage their limited resources. The distance from water points and time taken in the queue indicate a water-stressed community.

Conclusions and Recommendations: The crude mortality rate is not indicative of a critical emergency (less than 1/10000/day), though the global acute malnutrition (GAM) rate shows a poor nutrition state of the population (a GAM prevalence of 5-9 is an indication of poor population nutrition status). Water and food available per person per day was inadequate. Water distribution was suboptimal. We recommend UNICEF to extend water sources closer to the population; appropriate and adequate water storage facilities should be provided to boost daily water per capita. Community health services should be strengthened by Real Medicine Foundation, International Rescue Committee and Medicine Sans Frontier (MSF) to step up prevention efforts. Primary food production should be encouraged to enhance food security and local storage capacities should be explored.

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Burden of Injuries due to Gender Based Violence in Uganda, 2011 - 2016

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Summary: *Injuries are a major public health concern accounting for an enormous share of global morbidity. Gender-based violence (GBV) refers to any act that is perpetrated against a person's will based on gender and unequal power relationships and is a significant contributor to the burden of injuries in Uganda. There is paucity of information on the burden of injuries due to GBV in Uganda. We therefore carried out analysis of secondary data reported through the routine Uganda Health Management Information System (HMIS) from 2011 – 2016 on injuries due to GBV. Logistic regression was used to assess trends of injuries due to GBV over the years. The highest cumulative incidence of injuries due to GBV was reported in 2013 at 15.3 per 100,000. The incidence of GBV has been increasing by 14% per year from 2011 – 2016 (Odds Ratio: 1.14, P-value <0.0001).*

Introduction: Injuries have become a major public health concern accounting for an enormous share of global morbidity. Leading causes of injuries include road traffic crashes, violence, homicide, drowning, falls, fires and poisoning. GBV refers to any act that is perpetrated against a person's will based on gender and unequal power relationships. All are affected by GBV although women, girls and children are most at risk because of their vulnerability. Globally, one in four children has been physically abused and one in seventeen older people have been abused in the past month (1). GBV negatively affects one's physical, mental, sexual and reproductive health and often leads to injuries, disability and death. Injuries resulting from GBV translate into massive medical costs with other economic losses involved due to loss of productivity (1).

In Uganda, more females report physical injuries due to GBV than males (2). The 2012 UBOS report indicted that 59.6% of the women in Uganda have ever experienced physical violence since the age of 15 years (2). Possible drivers for GBV may be weak policies, poor law enforcement, low education status, cultural beliefs, poverty, attitudes and harmful use of alcohol (3; 4; 5) and usually happens in the framework of family, community, work and institutions, places where they should be safe and protected (6; 3; 7).There is paucity of information on the burden of injuries due to GBV in Uganda yet that data is captured in the HMIS but not analysed over the years. We therefore carried out an analysis of injuries due to GBV from 2011 to 2016 to determine the burden according to person, place and time, stimulate a deeper research on risk factors for GBV and to enhance planning and inform policies to curb GBV in Uganda.

Continued from page 4

Methods: We carried out a cross-sectional analysis of secondary data reported through the routine HMIS from 2011 – 2016 on injuries due to GBV. HMIS is a standard data collection tool used by the Ministry of Health in Uganda to collect information from patients seeking medical care from all public and private health facilities. We extracted regional based data on injuries due to GBV and calculated cumulative incidences using 2014 Population Estimates from Uganda Bureau of Statistics. Logistic regression was used to test trends of injuries due to GBV over the years. Results were presented in tables and graphs to indicate trends of injuries due to GBV in Uganda.

Results:

Burden and trends of injuries due to GBV in Uganda

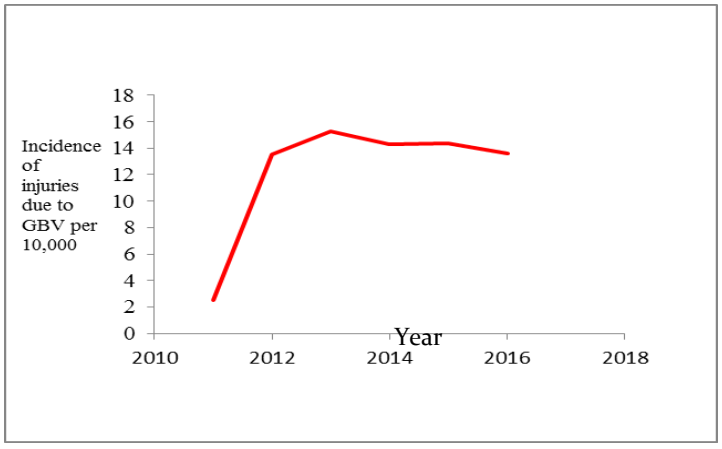
From 2011 to 2016, a total of 254,795 patients with injuries due to GBV reported in health facilities. The highest cumulative incidence was reported in 2013 at 15.3 per 100,000 as shown in table 1. However important to note are the very low cumulative incidence registered in 2011 at 2.5 per 10,000.

Period	Number of injuries due to GBV	Population	Rate per 10,000
2011	8,002	32,086,509	2.5
2012	44,491	32,935,889	13.5
2013	51,576	33,785,270	15.3
2014	49,542	34,634,650	14.3
2015	51,343	35,673,690	14.4
2016	49,841	36,593,000	13.6

Table 1: Showing cumulative incidence over the 5 year period

The incidence of injuries due to GBV steeply increased from the year 2011, and has remained stable over the preceding years as seen in figure 1. Testing trends for injuries due to GBV using logistic regression from 2012 to 2016 showed that the trend remained constant (Odds Ratio: 1.0, P-value <0.0001). This illustrates that the incidence of injuries due to GBV has not changed from the year 2012 – 2016 and this is statistically significant.

Figure 1: Cumulative incidence of injuries due to GBV in Uganda between 2011 and 2016



Distribution of injuries due to GBV by sex

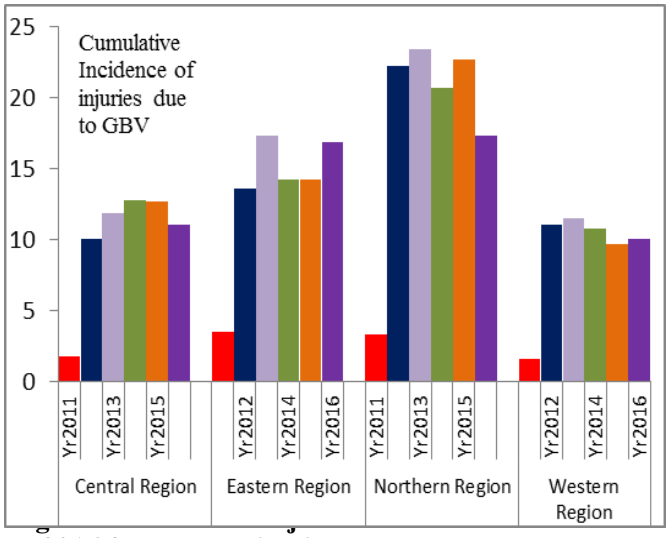
Based on the rates of 2016 and 2015, females were more affected than males although there was no significant difference between them. This is an indication that there is a significant proportion of males who are also affected by GBV as seen in table 2.

Sex	Period	No. of injuries due to GBV	Population	Incidence per 1,000
Male	2015	20,777	17,572,657	1.18
	2016	20,576	18,084,482	1.14
Female	2015	30,566	18,101,033	1.69
	2016	29,265	18,628,247	1.57

Table 2: Showing injuries due to GBV by sex

Trends of GBV for each region over the 5 years

Generally over the years, the Northern and Eastern region have experienced higher rates of GBV compared to other regions. There was a sharp increase of cases from 2011 in all the regions and the rates have relatively stabilized over the preceding years as seen in figure 2.



to 2016 for each region in Uganda

Discussion

In 2011, very low numbers of injuries due to GBV were recorded; this could be attributed to under-reporting. The reporting rates for HMIS 105:1 was 10.6% for the indicator on injuries due to GBV for the year 2011 which is below the recommended of 90% .The trend of injuries due to GBV has remained stable from the year 2012 to 2016, and therefore calls for a need to strategize priorities and interventions in this sector of injury prevention. There are no specific laws on GBV, although there are provisions that address it in the 1995 Constitution of Uganda, the Penal Code Act CAP 120, the Children Act CAP 59, among others, however, these have not seen much success (8). This can be attributed to power imbalances between women and men and how GBV is deeply entrenched in some cultural practices and intimate relationships (8). The highest incidence of injuries due to GBV was reported in 2015 at 15.3 per 10,000 however, this incidence is underestimated because only a small proportion of GBV is reported to hospitals and captured in the HMIS. Incidence of injuries due to GBV was predominant in the Northern region compared to other regions. This is similar to what was reported in the Uganda Demographic and Health Survey (UDHS) report of 2011 where the Northern and Eastern regions had higher incidences of GBV compared to other regions (9). In the Northern region, this could be attributed to a number of factors which include; post-traumatic stress disorder

Continues to page 6

Continued from page 5

due to previous rebel insecurity, insecurity in this region due to civil unrest in South Sudan leading to a number of refugees in the Northern region (UPF, 2014, UNICEF, 2014). Previous experience of violence has been documented to be a risk factor for triggering violence (3). High incidences of injuries due to GBV were also noticed in the Eastern region and this was similar to what was reported in the UDHS 2011, report. Reasons for high incidence of GBV in the Eastern region could be attributed to the heightened level of acceptability of wife battering in this region (9). A significant proportion of males have also been affected by GBV in Uganda and so prevention and control measures should therefore be targeted towards all people and not just women and children as it is with most interventions.

Conclusion

The trend of injuries due to GBV has remained stable from the year 2012 to 2016, and therefore calls for a need to strategize priorities and interventions in this sector of injury prevention. The Northern and Eastern region shared disproportionate amounts of injuries due to GBV.

Recommendations

Prevention and control measures GBV should be targeted towards all people and not just women and children as it is with most interventions. There is thus a need to **engage men and boys in GBV prevention and response.**

There is need to carry out evaluations of GBV prevention efforts and interventions in place so as to assess the existent gaps.

There is need for continuous **assessment, monitoring, and documentation of injuries due to GBV in Uganda**

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Policy Brief

Incorporation of Yellow fever vaccination in Routine Expanded Program on Immunization in Uganda

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Executive summary: *On March 28, 2016, a cluster of deaths resulting from jaundice and hemorrhagic symptoms occurred in Masaka, Central Uganda. We investigated this outbreak to determine the nature of disease, identify risk factors, and recommend control and prevention measures. We conducted medical record reviews and active community case-finding. We also conducted entomological studies and environmental assessments. At least 32 cases (7 confirmed) were identified. The overall attack rate (AR, per 100,000) was 0.48 overall (6.4 Masaka, 3.1 Rukungiri and 1.9 Kalangala); the case-fatality rate was 22% (7/32). Men (AR=1.2/10,000) and persons aged 30-39 years (AR=4.0/10,000) were most affected. The commonest symptoms were fever, abdominal pain/ diarrhea, headache, jaundice, and unexplained bleeding. No one interviewed during this investigation was vaccinated against yellow fever yet sylvatic monkeys and Aedes mosquitoes the known reservoirs were identified on the farmlands in four villages. This investigation revealed that the Ugandan population is not vaccinated against Yellow fever infection yet Uganda lies within the yellow fever belt. In addition to the hot humid conditions that enable both the sylvatic monkeys and the Aedes mosquitoes to thrive. We recommend yellow fever vaccine to be included in the Ugandan routine immunization schedule.*

Introduction: Yellow fever, a disease of international importance, is an acute viral hemorrhagic disease transmitted from human to human or animal to human by the *Aedes* mosquito**.** Yellow fever is considered to be a re-emerging disease due to increasing reports of its occurrence in different parts of the world in the recent years (1). Worldwide, the number of yellow fever cases has increased over the past twenty years. This may be

Continued to page 7

Continued from page 6

attributed to declining population immunity to infection (2), increased human activities such as deforestation, urbanization(3), population movements(4) and climate change (5).


Form No. 9-28-33C
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In 2013, it was estimated that yellow fever affected 130,000 people in Africa and that about 78,000 people died from the disease.(6). There is no specific treatment for Yellow fever, thus only supportive treatment to manage symptoms. Up to 50% of severely affected persons without treatment die from yellow fever (7). WHO recommends Yellow fever mass vaccination as the most effective means of controlling yellow fever outbreaks (8). Uganda is among the so called 32 African countries considered at risk of Yellow Fever transmission (lies in the yellow fever belt) (9). The first documented outbreak of yellow fever in Uganda was reported in Bwamba County, Western Uganda in 1941 with subsequent outbreaks in 1952, 1959, 1964, 1971 and 2010 (10, 11). The largest yellow fever outbreak in Uganda occurred in northern Uganda in 2010 and affected 181 people of which 45 died (CFR=24.8%) (10). On March- April 2016, there was a Yellow fever outbreak in the Masaka, Rukungiri and Kalangala Districts. The aim of this investigation was to identify risk factors and to develop evidence based recommendation for prevention and control of future outbreaks.

Approaches and Results

To be able to identify as many cases as possible, we used two strategies i.e. health facility and community case finding strategies. The team visited health facilities and reviewed out-patient, in-patient and laboratory records to identify current or previous patients that fulfilled the case definition. Patients who had been seen at a health facility and discharged were followed up and assessed. With the help of Village Health Teams (VHTs), the team also visited affected villages to identify more cases. We conducted a matched case-control study using a ratio of 1 case: 4 controls. Controls were persons from the same village who never had any symptoms resembling yellow fever from January 2016 onwards, matched by sex and age (±5 years). We selected controls using systematic random sampling method from the village household list from the same village as the case-persons. We assessed potential risk factors such as, presence of monkeys on farm land and homes, yellow fever vaccination, cultivation in forested and/or swampy areas and travel history.

Entomological assessments were conducted to identify breeding sites, presence of the vectors (using light traps) and reservoirs.

We identified 32 case-persons (7 confirmed and 7 probable). Males were more affected than females (Men (AR=1.2/10,000)). The most affected age group was 30-39 years with an attach rate of 40 cases per 10,000 populations. The overall attack rate (AR, per 100,000) was 0.48 overall (6.4 Masaka, 3.1 Rukungiri and 1.9 Kalangala); the case-fatality rate was 22% (7/32). The commonest symptoms were fever, abdominal pain/diarrhea, headache, jaundice, and unexplained bleeding. At least 62% of case-persons cultivated in forest areas while 69% cultivate in swampy areas. Yet sylvatic monkeys- the known reservoirs of yellow fever virus were part of the ecosystems due to massive deforestation. It was common to find Monkeys around homes and gardens. Entomological assessments found the presence of the Aedes *spp* mosquitoes and numerous breeding sites around farmlands and homesteads. None of the persons interviewed were vaccinated against yellow fever infection.

Conclusion: This was a yellow fever outbreak that occurred in a population without immunity against yellow fever virus. The outbreak was associated with persons who cultivated in forests and swampy areas which is

Continued to page 8

Continued from Page 7

suggestive of Jungle (Sylvatic) transmission.

Implications: If the population is not vaccinated against Yellow fever virus, similar outbreaks are likely to appear in other parts of the country. This will result in disruption of economic activities such as tourism and travel as well as loss of lives since the disease has a potential to cause high morbidity and mortality. Vaccination of the population is the cheapest control measure than dealing with costs associated with repeated outbreaks.

Recommendations: Ministry of Health should look at the available evidence and plan to include the yellow fever vaccination into the routine immunization schedule. The Integrated Disease Surveillance and Response (IDSR) should strengthen yellow fever surveillance in the entire country.

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An investigation of increasing Schistosomiasis cases in Oyam district, Northern Uganda, April 2017

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Summary: *In March 2017, Oyam District Health Office reported to Ministry of Health an increased number of people suspected to be dying of Schistosomiasis in four sub-counties. We conducted an investigation to determine the scope and source of schistosomiasis infection; possible risk factors; and identify the challenges for schistosomiasis control so as to guide control measures. We identified a total of 82 suspected cases and confirmed 30. Males were more affected compared to females. Children between 5 and 14 years were most affected followed by children less than 5 years. Bathing and stepping in unsafe water sources without protective gear was a risk factor for schistosomiasis infection, as well as non-schooling among school age children. We recommended introduction of praziquantel to children younger than 5 years, provision of safer water sources like construction of more boreholes in the affected communities, more sensitization and health education about schistosomiasis and preventive chemotherapy with praziquantel.*

Introduction: In March-2017, the Ministry of Health through the Emergency Operation Center received communication from Oyam District of increasing deaths of suspected schistosomiasis in 4 sub-counties of Otwal, Minakulu, Aleka and Myene in a period of 5 months. Oyam district is located in Northern Uganda and is endemic for 2 schistosoma species: *Schistosoma mansoni* and *S. heamatobium* that causes intestinal and urinary schistosomiasis respectively. The district has been conducting annual preventive chemotherapy through mass drug administration (MDA) using praziquantel since 2006 in both schools and communities as per World Health Organisation (WHO) recommendations, however treatment coverage was 60.8% in 2016 against the recommended 75% (2).

Continued from page 8

Praziquantel uptake had been resisted in many communities due the adverse side effects it causes yet majority of the population in the affected sub-counties have limited access to safe water sources like boreholes or piped water.

Methods: We defined a suspected schistosomiasis case as onset of ≥3 of the following symptoms: abdominal pain, abdominal distention, blood in urine, blood in stool, bloody diarrhea, vomiting blood, diarrhea, in a resident of Oyam district from 1st January 2001 onwards while a confirmed schistosomiasis case was defined as a suspected case with a positive rapid diagnostic test for circulating cathodic antigen in urine (CCA). We actively identified cases from the affected communities and reviewed both health center records and Village Health Team (VHT) records in four sub-counties. We reviewed health center records from 3 health facilities and then generated hypotheses from descriptive epidemiology. We conducted a case control study where cases and controls were frequency matched by age group. We collected urine samples for testing schistosomiasis and also carried out an environmental assessment in the community.

Results: We identified 82 suspected cases and confirmed 30, with 12 recorded deaths from 2001 to April 2017. Children under 15 years made up 70% of cases of which 21% were below 5 years. The median age was 8 years (range 2-72). Study population had 18 (42%) stay-home children while 16 (37%) were pupils and 9 (21%) were farmers. Six out of 12 suspected schistosomiasis deaths occurred in the last 3 years alone. Males were more affected with a prevalence of 0.1% compared to females (0.04%). Children between 5 and 14 years were most affected (prevalence = 0.11%) followed by children less than 5 years (prevalence = 0.07%) and people 15 years and above were least affected (prevalence= 0.04%).

Figure1: Distribution of symptoms of schistosomiasis among cases

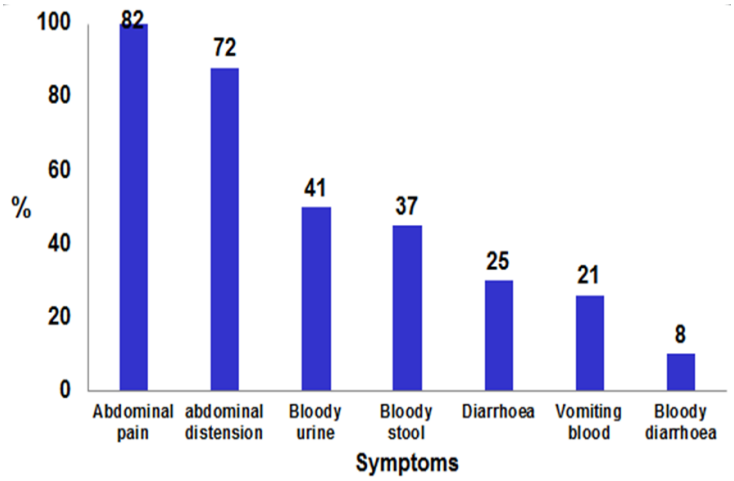
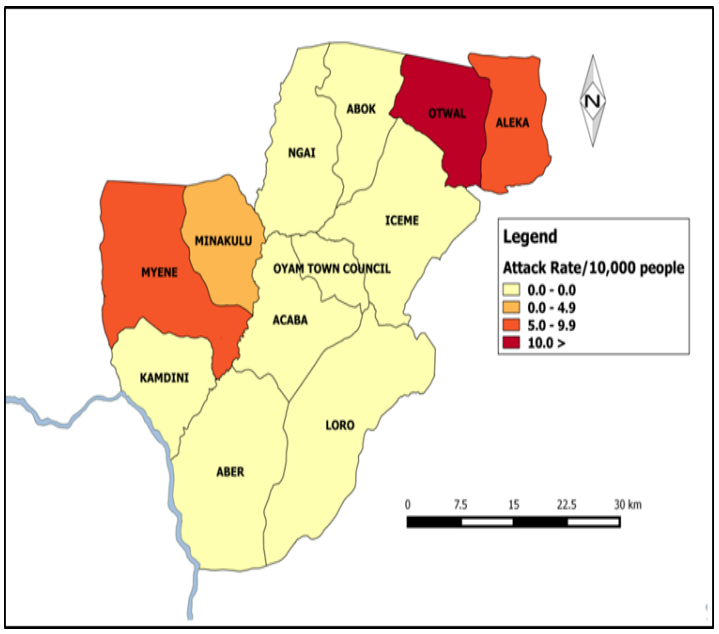


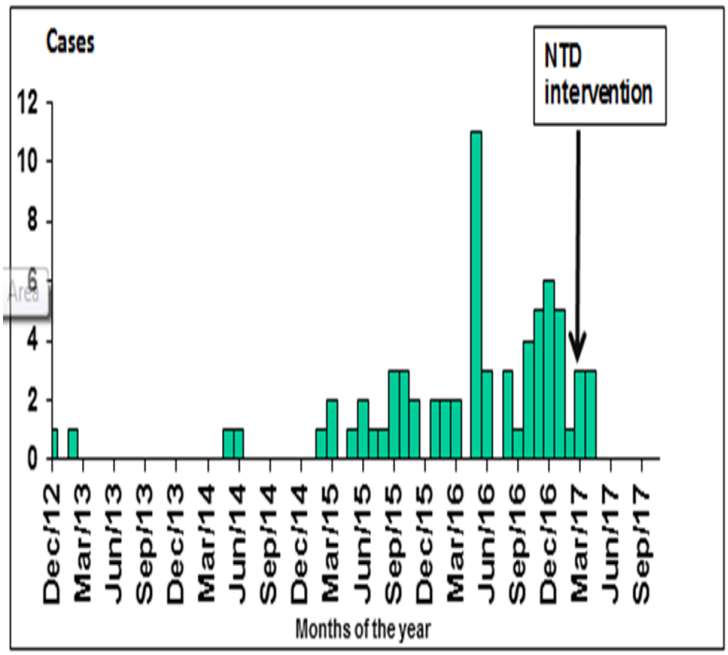
Figure 2: Map showing attack rates/10,000 of schistosomiasis cases in Oyam District, April 2017



The sub county of Otwal was the most affected with a prevalence of 0.18.

Figure 3: Increasing number of cases over time with a peak in May 2016.

Laboratory findings



36 urine samples were collected and 30 tested positive using the CCA rapid test kit.

Environmental assessment

The streams, wells and the dams here referred to as unsafe water sources were infested with water snails. Residents who were mostly barefooted stood in these water sources while bathing, washing clothes, fetching of water for home use.

Continues to page 10

Continued from page 9

Case control findings: The risk factors for schistosomiasis morbidity were bathing from unsafe water sources, (OR: 19, 95% CI: 8.4 - 40.6), comparing 49/21cases/controls; fetching water from unsafe water sources (OR: 3.9, CI: 2.0 - 7.5) comparing 42/42 cases/controls and not going to school among school-age children (OR:3.7, CI: 95% CI 1.7 - 7.8) among 43/102 cases/control.

Discussion: This investigation documents an upsurge of schistosomiasis infection in the district over the last 5 years. During the political insurgency in northern Uganda between 1987 and 2007 (2), Oyam district was largely an internally displaced people's camp. Many people were forced into the area and were living in water-stressed conditions. Rescue missions constructed valley dams (2) to improve on water supply for domestic animals but the dams are now reservoirs for fresh-water snails that are schistosomiasis vectors. Despite the annual provision and distribution of free praziquantel, drug uptake is still low. The lack of sufficient safe water sources as well as the difficulty of having to make long queues at the few and distant boreholes compel residents to opt for the unsafe water sources. At the open streams, dams and wells, mostly male children were seen swimming or bathing in the water bodies (1). We did not observe any toilets built near these water bodies and we assumed that the community uses the same water bodies or bushes around them as toilets. An infected person urinating and defecating in or near the water bodies completes the life cycle of schistosomiasis. It is this prolonged and recurrent exposure to unsafe water that permits cercariae from the snail vector to enter the human host and thus poses a great risk to their families to acquire schistosomiasis. Since the integration of Neglected Tropical Disease programs with Ministry of Health activities in 2007, there has been increased countrywide distribution of Mass Drug Administration at the community level for the control of schistosomiasis but coverage still remains below 75% recommended by WHO (2).

Children below five years are at very high risk of infection yet Uganda has no policy on administration of praziquantel to children below 5 years. If these children continuously get new or recurrent schistosomiasis infections at such an early age they are even more prone to developing complications like anemia, malnutrition, poor mental development etc. This will lead to frequent school absenteeism which affects performance. The access to alternative safer water sources is a big challenge and the provision of protective wear as a barrier method in contaminated water sources is unaffordable. We however think that the provision of a child palatable formulation (3) as well as clinical involvement in addressing schistosomasis among children less than 5 years from the sub-county level and above will go a long way in targeting control among this age group and contribute towards breaking the viscous cycle.

Much as the application of chemical molluscides was the key strategy for schistosomiasis control in the 1950s and 1970s in many parts of Africa, S. America and Asia, it is not environmentally friendly to the ecosystem and not feasible in our large fresh water bodies (4).

Conclusions and Recommendations: There was an increase in cases of Schistosomiasis reported in 4 sub-counties in Oyam district. Children under 15 years were most affected because of their frequent entry into streams barefoot while swimming/bathing. Water sources used by the affected villages were infested with water snails believed to be intermediate hosts for schistosomiasis worms. Stepping in unsafe water sources (dams, streams and wells) without protective gear; bathing from unsafe water sources and not going to school increased the risk of acquiring schistosomiasis infection. Schistosomiasis was not being routinely diagnosed among the patients who had visited the health facilities. We recommended introduction of praziquantel to children younger than 5 years, provision of safer water sources like construction of more boreholes in the affected communities, more sensitization and health education about schistosomiasis and preventive chemotherapy with praziquantel.

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Evaluation of the Disease Surveillance System in Kiryandongo Refugee Settlement, Kiryandongo District, April 2017

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Summary: *In March 2017, we visited Kiryandongo Refugee Settlement in Kiryandongo District to ascertain the capacity for Integrated Disease Surveillance and Response (IDSR). We selected six health facilities serving the refugee settlement and interviewed their In-charges. All the 6 health facilities serving the refugee settlement were well staffed above the norms. IDSR systems were in place in all facilities but poorly implemented. The major obstacles in disease surveillance were non-use of case investigation forms in reporting of priority diseases (50%), absence of standard case definition booklets (50%), and absence of updated HMIS forms and registers (67%). This was coupled with non-functionality of the District Epidemic Preparedness and Response Committee (DEPPRC). We recommended IDSR refresher trainings in cycles of two years and supply of IDSR guidelines to all facilities and DHTs. We also recommended regular support supervision of health facilities to strengthen IDSR activities, and strengthening of the DEPPRC and the district rapid response team (DRRT).*

Background

By March 2017, about 52,607 individuals were resettled in Kiryandongo Refugee and IDP camp. Most of these people were from South Sudan (51,884) and the rest from DRC (170), Kenya (161), Sudan (104), and 226 internally displaced persons (IDPs) from Uganda. Due to the existing humanitarian needs, many local and international organizations have responded to the emergency to improve on the welfare of the affected populations. Like any emergency situation, Kiryandongo Refugee Settlement is vulnerable to disease outbreaks and seasonal peaks in malnutrition. An upsurge of measles, cholera, Hepatitis B, malaria, upper respiratory tract infections and diarrhoeal diseases have occurred on many occasions. The capacity of the district health system to detect, report, analyze, investigate, prepare and respond to these outbreaks and health threats had not been evaluated before. We assessed the capacity of the District Epidemic Preparedness and Response Committee (DEPPRC), the District Rapid Response Team (DRRT), Health Facility teams and Village Health Teams (VHTs) to conduct Integrated Disease Surveillance and Response (IDSR) in both the resettlement camp and the host community.

Methods: We selected five health facilities serving the refugee settlement out of the total of 24 health facilities serving the district and interviewed their In-charges and Surveillance Focal Persons. A sixth health facility serving the host community was included in the assessment. The six health facilities visited were: Kiryandongo Hospital, Panyadoli HCIII, Panyadoli Hills HCII, Katulikire HCIII, Nyakadot HCII, and Diika HCII. Key informant interviews were conducted with DHT members including the District Surveillance Focal Person, Principal Nutrition Officer, and some members of the DRRT and DEPPRC. A consultative meeting was held with 80 VHTs and their focal persons to generate data on community surveillance. Data was collected electronically using Kobo Collect for Humanitarian Emergencies. Observation method was used for registers and reporting tools based on the following attributes: Simplicity, Flexibility, Acceptability, Sensitivity, and Timeliness.

Findings: Human Resources capacity gaps affecting IDSR. A total of 7 out of 11 DHTs and 48 health facility staff were trained on IDSR in 2015. Most of the IDSR trained health workers have been absorbed in government service in other districts hence leaving a big skills gap in IDSR services in Kiryandongo District. Only 70 out of 372 VHTs in the district were trained on integrated community case management (ICCM). Most of the VHTs were from the refugee and IDP settlement (60) and only 10 were from the host community near the settlement. The training mostly concentrated on case management. All health facilities serving the refugee and IDP populations are adequately staffed and in some cases the staffing levels exceed the government recommendations by far due to interventions by relief agencies.

Capacity of DHT to investigate and respond to Outbreaks

The DSFP acknowledged the occurrences of key diseases such as Bacterial Meningitis in Mutundwa Sub-county in the year 2012, and incidences of malnutrition both in the camp and host community. He also noted that the DHT was incapacitated to investigate and respond to some of the outbreaks.

Sensitivity of the surveillance system

The surveillance system was sensitive in detecting suspected outbreaks from the health facilities however, all the cases listed below were not investigated by the DHT (Table1).

Continued on page 12

Table1: The Common Diseases, Conditions and Events reported between April-2016 to March 2017, Kiryandongo District

Health Events Reported	Number of Cases
Malaria Cases	88,746
Typhoid Fever Cases	575
Dysentery Cases	349
Animal Bites (Suspected Rabies) Cases	142
Adverse Events Following Immunization Cases	4
Presumptive Multi Drug Resistance (MDR) TB Cases	4
Acute Flaccid Paralysis Cases	2
Measles Cases	32
Malaria Deaths	30
Perinatal Deaths	9
Maternal Deaths	3
Presumptive Multi Drug Resistance (MDR) TB Deaths	1

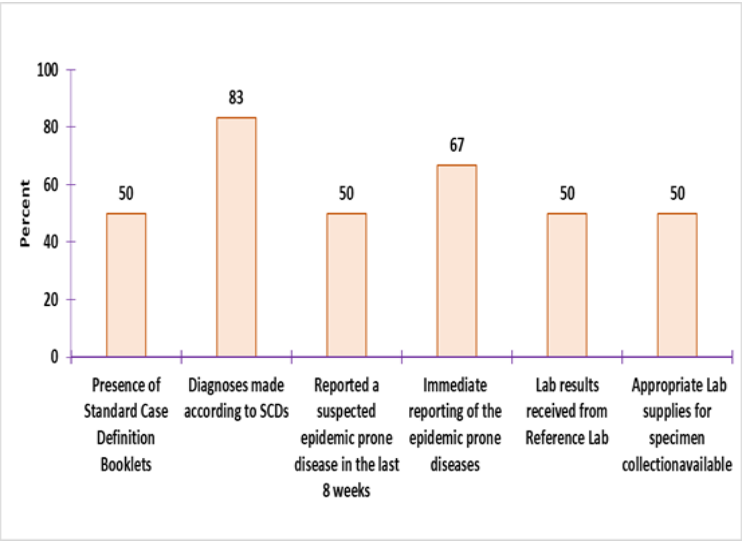
Source: DHIS2, Ministry of Health, Uganda.

Simplicity and Flexibility of the surveillance system Simplicity and acceptability were assessed using questions concerning compliance, ease of use, and number of steps in the system alongside users' opinions on the appropriateness of IDSR in Detecting, Recording and reporting of priority Diseases.

Detection of diseases: Diagnoses of priority diseases were made according to standard case definitions (SCDs) in 83% of the health facilities. No facility had drawn its list of priority diseases, events and conditions.

Figure 1: Functionality of the surveillance system to detect and report priority diseases

Acceptability and Timeliness of the surveillance system: The average weekly reporting rate in Kiryandongo



District was 79% at the end of March 2017 (Week13). This is still below the national target of 100% implying low level of acceptability and use. Most of the poorly reporting facilities serve the refugee population. The DSFP attributed it to inadequate skills to record, summarize and send reports on mTrac reporting forms by the various section heads in the health centres. About 67% of the health facilities had missed submission of at least one weekly report in the last 8 weeks.

Data quality attributes: Completeness was assessed by looking at the filling of the registers and the reporting forms which translates into quality of records from which reports are generated. The register is poorly filled such that some of the key indicators like suspected cases of malaria; next of kin cannot be extracted easily. The poor filling of these registers is associated with the inadequate training of data clerks.

Capacity of health facilities for analysis and interpretation of data: Only 33% of the 6 health facilities assessed demonstrated the capacity to analyze and present data using charts and maps.

Functionality of DEPPRC and DRRT

Kiryandongo District has a non-functional Epidemic Preparedness and Response Committee (**EPPRC**). This committee was set up in the year 2015 by MoH but has not been performing their key functions. Several factors such as attrition of key members contributed to the non-functionality of this committee. Most of the members were not trained on IDSR. There is also no dedicated funding for this committee hence limiting their sitting. The DRRT was functional with some supplies in stock. The Epidemic Preparedness and Response Plan is lacking.

Conclusions: Many relief agencies have supported the health team in Kiryandongo refugee settlement, and much has been done to attend to cases in the facilities by increasing staffing levels. It appears less work has been done to support disease surveillance, because IDSR reporting standards are suboptimal in many health facilities.

Public Health Actions: We disseminated our findings to the DHT and partners and immediate actions for improving early detection and response to alerts and outbreaks were agreed upon. We conducted a training of the District Rapid Response Team, DEPPRC and Health Partners on IDSR after which they were tasked to trained health facility staff on prompt case detection and reporting. We also prepared the DEPPR plan and shared with the DHT.

Recommendations: We recommended IDSR refresher trainings in cycles of two years and supply of IDSR guidelines to all facilities and to DHTs. The DEPRC and DRRT should be strengthened. Support supervision of health facilities should be improved.