الجمهــــــــوريـة اليمنيــــــة
وزارة الصحـة العامــة والسكــان
قطاع الرعاية الصحية الأولية
الإدارة العامة لمكافحة الأمراض والترصد

First National Yemen Field Epidemiology Training Program Conference

"Towards Strengthen Public Health in Yemen"

Sana'a – Yemen

26-27 February, 2014

EMPHNET
The Eastern Mediterranean
Public Health Network

World Health Organization

FIRST NATIONAL YEMEN FIELD EPIDEMIOLOGY TRAINING PROGRAM CONFERENCE

2014

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1. Welcome messages

Dear Conference Attendees

As a cardiologist working in Yemen for two decades, I came to the Ministry office as a minister of Public Health and population in December 2011. Dengue outbreak was the first problem that I faced in the office. It was a hot issue to be discussed on the table of the cabinet where the Prime Minister and the ministers were asking about the hottest issue in the media. I went to Hudaidah governorate myself to supervise the interventions that the sector of Primary Health Care was implementing at that time. Visiting several districts, discussing with the doctors in governmental as well as private hospitals, meetings with affected people in the villages and watching the vector control spraying staffs,…etc, from all these I realized the importance of this Public Health fields on reality.

From that time it is now more than 2 years in the office, where many other outbreaks that Yemen faced. Measles, Dengue, Rubella , Vaccine Derived Polio Virus (VDPV) and others were major events during the last 2 years. Many activities that I launched during my last 2 years were a Public Health activities like National Immunization Days (NIDs), Malaria Control activities, Schistosomiasis Elimination campaigns and others.

From what I mentioned above, I feel very happy that Yemen is hosting the 1st National Conference for FETP with the theme " towards Public Health in Yemen". I am also very pleased to congratulate the 12 FETP graduates of the first national graduation from the Yemen FETP. Also I congratulate the 3 Yemeni doctors who studied and graduated from Jordan FETP in 2011. I am sure they will play major roles in the future of Public Health in Yemen.

Since I started my speech mentioning that I am a cardiologist , it is also a very important chance to emphasize that YFETP in the coming years will play an important role in controlling the non communicable diseases because these diseases are increasing in Yemen dramatically and many efforts should be done to control them.

Wishing the best for the conference and to see the graduates helping their country in the Public Health field not only at the central level but also in their governorates.

Prof. Ahmed Qassim Al-ansi

Minister of Public Health & Population
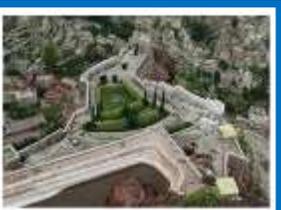
Dear distinguished guests and participants

It was in the year 1994, when I first heard about the Field Epidemiology Training Program   (FETP) when I was a trainee in a short course conducted by USAID for outbreak investigation. The training was hold in the Central Public Health laboratory CPHL in Sana'a. The trainers were from the Saudi FETP. Since that time it was my dream to establish this program in Yemen.

 I cannot express my feelings in the year 2014, where the 1st YFETP conference is organized and 12 Yemeni doctors are going to be graduated in end of February. In addition to that 3 Yemeni doctors also finished their training in the Jordan FETP. So we have now in Yemen 15 holding the FETP certificates.
The story of establishing the program in Yemen was a challenge because there were some other programs in the region. It took us several years to convince the CDC in Atlanta to establish it in Yemen. An assessment mission from CDC visited the country. The mission travelled to several governorates and held several meetings and workshops before this dream became a real thing. The history will not forget the great person behind this which is Dr.Aisha Juman. I know that she suffered a lot and discussed for many hours and left her family in USA for months to make this program a real and functioning well in the absence of resident advisors.

Nobody in the future will talk about YFETP without appreciating in golden words the country office of World Health Organization particularly Dr. Mohammed Osma Mere who expressed how he noticed the rapid changes in the level of the trainees in the first half of the program. Now WHO is our second partner in supporting the program. This is highly appreciated by the government of Yemen as well as by the CDC.

The FETP is a chance for the Yemeni working in the health field (human and animal) to build their capacities in epidemiology . I am sure that within few years we will be able to have at least on FETP graduate in each governorate and at least one well trained person in epidemiology (3-9 months training) in each district. There is a good support from Global Alliance for Vaccination (GAVI) for this training in the next 3-5 years.

Finally I have to say that this success in establishing the FETP in Yemen and its achievements was not going to happen without the political commitment from the minister of Public Health & population and from his deputy for Primary Health Care. I hope that this commitment will be reflected in the near future in allocated budget from the government in order for the FETP to be a sustained program.

Dr. Abdulhakim Ali Al-Kohlani,

Director General of Disease Control and Surveillance,

Ministry of Public Health and Population, Yemen,

Director of Y-FETP

I would like to extend my gratitude to the MOPH&P that made possible for the program to succeed, despite difficulties and lack of adequate resources. It is also a great pleasure for me as a resident advisor to be part of this success and witness the first Yemen Field Epidemiology Program (YFETP) cohort complete their required tasks to graduate and actually graduated today, and I say Congratulation to you all.

Today, you have completed your formative years that you need to put into practice for the benefits of the health of the citizen of this nation. Over two years, you were engaged in doing various public health activities, whether outbreak investigation, surveillance analysis, participating in capacity building by training surveillance officers at the governorates, disease eradication activities, participated in training the incoming FETP officers, conducting surveys, assisting senior Ministry staff and other public health activities. From today on, you have your engines and wings and can fly, and also capable of doing the nations business. You have now the capacity to change the way public health policy decisions are made by making it data driven and evidence-based. Although that may sound theoretical, but if you read the history of public, people like you changed the way public health is practiced, like John Graunt.

During his time there was an increased understanding of the need to collect qualitative data for the purpose of defining the state. This was known at the time as *Political Arthmetic*. The first solid use of data collection for the purpose of understanding health status came from John Graunt in the sixteen hundred (1620-1674), the father of demography and descriptive epidemiology. In 1662, he published, *Natural and Political Observation, Upon the Bills of Mortality*. By studying London death data for the previous 75 years, Graunt found certain predictability of mortality with respect to natural events and phenomenon. Using this data, Graunt developed the first life table that described the mortality rates by age. We expect you to start a new era in using data for public health planning and decision making in Yemen.

Now you have graduated and what I do expect from the Ministry of Public Health and Population and other agencies involved in health decision making in Yemen to use the graduated officers to help you in doing your day-to-day activities. Also, I do expect the graduating officers to be proactive and use their capacities to change the current culture of public health practices.

Congratulations again.

Mohamed G Qayad, MD, MSc, MPH, MSPH

Resident Advisor –TEPHINET/CDC

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7. Committees and Membership

a. Organizing Committee

Name	Organization	Remarks
1. Majid Al-Jonaid	Deputy Minister, PHC	Chair
2. Abdulhakim Ali Al-Kohlani	Director, Y-FETP	Chair
3. Ali Bin Break	**Polio National Coordinator**	Member
4. Basel Obaid	FETP, Jordan	Member
5. Nabiha Al Bhar	1st FETP Cohort	Member
6. Nadhira Al Saqaf	FETP admin	Member

b. Scientific Committee

Name	Organization	Remarks
1. Mohmed Qayad	RA, Y-FETP	Chair
2. Abdulwahed Al Serouri	TA, Y-FETP	Member
3. Abdulhakim Ali Al-Kohlani	Director, Y-FETP	Member
4. Nabiha Al Bhar	1st FETP Cohort	Member

c. Logistic Committee

Name	Organization	Remarks
1. Abdulhakim Ali Al-Kohlani	Director, Y-FETP	Chair
2. Nabiha Al Bhar	1st FETP Cohort	Member
3. Nadhira Al Saqaf	Y- FETP admin	Member
4. Akram Ishaq	Y- FETP admin assistant	Member
5. Nassr Salah	Secretary	Member

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3. Yemen Field Epidemiology Training Program

a. Introduction

Yemen Field Epidemiology Training Program

BACKGROUND

For more than 60 years, the U.S. Centers for Disease Control and Prevention (CDC) has been dedicated to protecting health and promoting quality of life, through the prevention and control of disease, injury and disability. Since 1980, CDC, through the Field Epidemiology Training Programs (FETP), has worked with ministries of health around the world, along with other partners, to strengthen national and local public health systems and to address the severe shortage of skilled epidemiologists worldwide. FETPs provide training in applied

epidemiology to build a pool of public health workers able to use science and data to appropriately respond to public health threats, including polio, cholera, tuberculosis, HIV, malaria, and emerging infectious diseases of animal origin. As part of their mission to strengthen public health systems globally, FETPs also assist countries to meet their core capacity requirements for surveillance and response under the revised International Health Regulations (IHR, 2005).

FETPs are two year, in-service training programs modeled after the Epidemic Intelligence Service, an applied epidemiology training program created by CDC in 1951. FETPs emphasize practical experience, with residents spending about 25% of their time in the classroom and the remaining 75% of time conducting mentored field work. The classroom instruction focuses on epidemiology, disease surveillance, outbreak investigation, and biostatistics. In the field, residents conduct epidemiologic investigations and field surveys, design and evaluate surveillance systems, collect and analyze data using appropriate statistical tools and METHODSs, report their findings to decision- and policymakers, and train other health workers. CDC typically helps support new programs by providing the Ministry of Health with an in-country resident advisor (RA) for 4 to 6 years. The RA provides essential mentorship and technical assistance and also develops curricula, teaches courses, and guides training. CDC has helped to establish over 41 FETPs that have trained more than 2,300 graduates from 61 countries. More than 80% of graduates stay in their home countries and many obtain leadership positions within the public health system.

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Yemen FETP

The Yemen FETP program is a crucial program for the Ministry of Public Health and Population. The program started modestly with three trainees completing their second year in Yemen in 2011 after spending their first year in Jordan. The program received strong support from the Minister of public Health and Population and a memorandum of understanding was signed by MOPHP, CDC and WHO paving the way for establishing the program in Yemen. Yemen FETP program was designed to develop the foundation for using epidemiological data for policy decision making. The first cohort in Yemen of 12 officers started in February of 2012 after initial training in 2011. The cohort investigated many outbreaks leading to highlighting some of the emerging infectious diseases including dengue and chikungunya. They presented much of their work to the Minister and policy decision makers. They also analyzed surveillance data sets from multiple programs describing the epidemiology of the priority diseases in Yemen including malaria, measles, rubella, tuberculosis, schistosomiasis, rabies, cancer, and malnutrition, maternal and infant mortality. They submitted abstracts to scientific meetings, and presented at different international conferences, a testimony to the gained skills in scientific writings and communications. Finally, they developed and conducted research projects around Yemen answering important public health questions. They were successful in overcoming many challenges including the changes within Yemen, the lack of a resident advisor, and due to the frequent travel restrictions, inability to send in expert consultants to assist with the work. I am proud to have been part of the extraordinary team including members from MOPHP, CDC, and WHO, that established the program. I would also like to mention the Yemen FETP administrative staff who held the program together and provided support during some of the most difficult times in Yemen. I know that the graduating cohort will build the foundation for utilizing epidemiology for public health decision making and use their gained skills in addressing public health challenges in Yemen.

Aisha O Jumaan, PhD, MPH

Dr Asiah Joman

Department of State,USA
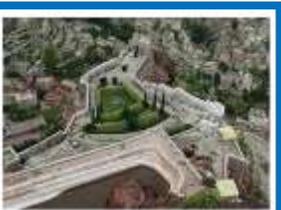
b. First cohort residents

Abdullatif Salem Alwaqedi

Abdulwahab Ahmed

Al-Nehmi

Ahmed Hamood Ali Al-Shahethi

Ali Ahmed Taleb Jaawal

Faisal Ahmed Hezam Daraan

Fuad Mohammed Shamsan

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Mohammed Ahmed Alnajjar

Maha Abdulmajid Obadi

Mohammed Ali Saleh

Mohammed Abdullah   Qasem

Nabiha Abdulrahman Alabhar

Yaser Mohammed Al-Eryani

4. Program at glance

Program At Glance		
Day 1: Wednesday 26 February 2014		
Session	**Description**	**Speaker**
Opening Ceremony		
9.00-9.10	Y-FETP director	Dr. Abdulhakem Al Kohlani
9.10-9.20	FETP resident	FETP resident
9.20-9.30	TEPHINET/CDCY-FETPResident Advisor	Dr. Mohamed Qayad
9.30-9.40	WHO Representative	Dr. Ahmed Shadow
9.40-9.50	EMPHNET	Dr. Mohannad AL-Nsour
9.50-10.00	H.E. Minister of PHP	Prof Ahmed Al Ansi
10.00-10.30	Introduction about Y-FETP	Dr Aisha Joman
10.30-11.00	**Coffee Break**	
Session 1: Disease Surveillance		
11.00-12.20	**Moderator: Dr Magid Aljunaid, Prof Ali Assabri,Prof Faris Lami, USAID**	
11.00-11.20	1. National and Regional Nutritional surveys data analysis, 1991-2012	Ahmed Hamood Al-Shahethi
11.20-11.40	2. Traumatic injection neuropathy Surveillance, Yemen, 1998- 2012	Ali Ahmed Jaawal
11.40-12.00	3. Rubella Surveillance System data analysis, 2008 – 2011	Yaser Aleryani
12.00-12.20	4. Descriptive analysis of surveillance data on cancer cases at the National Oncology Center, Yemen, 2007	Abdulwahab A. Al-Nehmi
Session 2: Outbreak Investigation		
12.20-13.40	**Moderator: Dr. Jamal Nasher, Prof Ahmed Al Hadad, , UNCIEF ,Dr .Ibrahim Ablan**	
12.20-12.40	1. Dengue Fever Outbreak Investigation in Taiz Governorate, June 15 – September 17, 2012	Mohammed Qasem
12.40-13.00	2. Outbreak investigation of dengue fever and hemorrhagic dengue fever, Ghail Bawazeer district, Hadramout governorate, May 2012	Faisal Ahmed Hezam Daraan
13.00-13.20	3. Rubella Outbreak of Baharan Village, Sana'a Governorate-Yemen, Nov.- Dec. 2013	Maha A. Obadi
13.20-13.40	4. Outbreak Investigation of Chikungunya and other febrile Illnesses, Al-Hawtah District-Lahj Governorate, March – April 2012	Mohammed Ali Abdullah Saleh
13.40-14.30	**Lunch**	
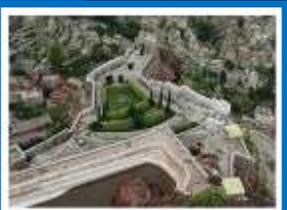
Session	Description	Speaker
Session 3: Planned Study		
14.30-16.00	**Moderator: Prof Huda Baslem, WB , Dr Amjad Kholy**	
14.30-14.50	1. Immunization status of 12 – 23 months aged children and factors affecting it in rural districts of Alhesen and Nehem, Sana'a Governorate, 2013	Mohammed Ahmed Alnajjar
14.50-15.10	2. Safe Injection Practice And Knowledge Among Health Care Workers At Amran Governorate Hospitals, 2013.	Abdullatif Alwaqedi
15.10-15.30	3. Unintentional Injuries: Magnitude And Feasibility Of Collecting Data. Yemeni Hospital	Nabiha Al-Abhar
15.30-15.50	4. Recovery rate and its determining factors among children aged 6 months - 5 years who were treated in the Severe Acute Malnutrition program, Hodeidah, Yemen, 2013	Fuad Mohammed Shamsan
15.50-16.00	Closing	
Day 2: Thursday 27 February 2014		
Session 4: Plenary: FETP Future in Yemen		
9.00-10.00	**Moderator: Dr. Abdulhakim A. Al-Kohlani, Dr Mohamed Qayad, Dr. Mohannad AL-Nsour**	
10.00-10.30	**Coffee Break**	
10.30-12.00	**Session 6: Posters presentations**	
10.30-12.00	1. The tip of the iceberg: cholera outbreaks in Al-dhale, 2011	Mohamed A. Abdullah
	2. Traumatic Injection Neuropathy (TIN), Yemen, 1998-2012	Ali .A. Jaawal
	3. Dengue Outbreak in a Refugee Camp in HaradhCity at the Border with Saudi Arabia, 2012	Ahmed H. Al-Shahethi
	4. Dengue Outbreak in Gail Bawazeer District, Hadramout Governorate, Yemen, 2012	Faisal Ahmed Hezam Daraan
	5. The hazard of conflict: cholera outbreak in Abyan Yemen 2011	Mohamed A. Qasem

Session	Description	Speaker
	6. Unintentional Injuries: Magnitude And Feasibility Of Collecting Data. Yemeni Hospital	**Nabiha AL-Abhar**
	7. Incidence of Rubella IgM Antibody in Yemen from 2008 to 2011	**Yaser Aleryani**
	8. Evaluation of acute flaccid paralysis surveillance system in the Costal Hadramaut Governorate, Yemen, 2013	**Mohammed A A Saleh**
	9. Chickunguanya Outbreak in Al-Hawtah District, Lahj Governorate,Yemen, 2012	**Maha A. Obadi**
	10. Mixed outbreak of Dengue and West Nile virus, Yemen, 2013	**Mohamed Qasem**
	11. Unintentional injuries among 9 to 12 grades school children in Sana'a Capital City, Yemen, 2013	**Ahmed H.Alshahethi,**
	12. Risk Factors for Hepatocellular Carcinoma Among Yemeni Patients Attending National Oncology Center, 2013	**Abdulwahab A. Al-Nehmi**
12.00-13.00	**Graduation ceremony and closing remarks**	
13.00-14.00	**Launch**	

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6. Executive summaries by track

a. Executive summaries of

Descriptive Analysis of Public Health Surveillance Data

Schistosomiasis Surveillance data analysis report, 2009- 2011, Yemen

Nabiha Abdulrahman Al-Abhar

Schistosomiasis, is one of the priority health problems in Yemen, given its high prevalence and potential to disability and fatal organ damage.

The National Schistosomiasis Control Program (NSCP) in Yemen started in 2002 as a central vertical program within the primary health care system, under the umbrella of Disease Control and Surveillance General Directorate.

The objective of the present analysis is to get a comprehensive picture of schistosomiasis epidemiology using the available data sources over the years 2009-2011.

The analysis was carried out during April and May 2012 using 2009-2011 data from three different sources of data: the National Surveillance System (NSS), the National Schistosomiasis Control Program (NSCP) Surveys, and Schistosomiasis Control Unit (SCU).

The results of the analysis showed some degree of variability by governorate and by year as well as within the same governorate from year to year. Although the risk map shows that Amanat Al Asimah is free from schistosomiasis, the NSS data shows many cases are from Amanat Al Asimah, which could be explained by the fact that many residents of Amanat Al Asimahare originally from the nearby endemic governorates (e.g. Sana'a, Amran, Al Mahwit). Another possible explanation that some of those who seek treatment at the SCU (located in Amanat Al Asimah) are mentioning that they are from Amanat Al Asimah where they are living temporary during seeking the treatment and not mentioning the governorate they are originally from.

Regarding age- specific prevalence rate, it is higher among 5-14 years and 15-44years age groups with 35% and 12% increase from 2009 to 2010 respectively. Concerning gender, all data sources show that males are generally more affected than females in almost all governorates; this can be attributed to a greater water contact behavior among males. Schistosomiasis tends also to have a seasonal trend, being high during March and June which are the rainy seasons. The 2009 survey shows that the predominant specie is S.Hematobium, while 2010 survey and the data from the SCU revealed that the majority of cases were S.Mansoni (78%) which could be explained by the fact that most cases attend SCU are from Tai'z and Dhamar where the prevalence of intestinal Schistosomiasis (S. Mansoni) is known to be above 70% in some districts.

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In conclusion, the available data make it clear that it is important to focus on high risk governorates to achieve the goal of schistosomiasis eradication, and that 5-14 age group needs to be targeted through campaigns for its high susceptibility. It is obviously demonstrated that surveillance data for schistosomiasis needs to be strengthened and that more variables need to be regularly reported. NSS need to be further evaluated. Availability of human and material resources, are prerequisite for the success of the any schistosomiasis surveillance system

National and Regional Nutritional surveys data analysis, 1991-2012

Ahmed Hamood Al-Shahethi

Yemen is known to has some of the highest acute and chronic malnutrition rates in the world. Currently there is no surveillance system for malnutrition at the Yemen Ministry of Public Health and population (MoPHP). Therefore we have conducted an analysis of the available data on nutritional status of Yemeni children under the age of five from 1991 to 2012.

An active search was done for all national and regional surveys that was carried out in Yemen between 1991 and 2011 that have a nutritional component and available at the Nutrition Departments at MoPHP, international organization (e.g. UNICEF, WFP), and through searching popular search engine (e.g. PubMed, Goggle etc..). Seven National and six Regional surveys were traced. Information was extracted and summarized using Microsoft Excel spreadsheet which includes information on year of the survey, geographical location, demographic data (e.g. age, gender), malnutrition indicators, and any associated factors.

The first DHS, 1991 national survey shows the following prevalence for wasting 13.2 %, underweight 29 % and stunting 42.4% compared to the 13 % ,35.5 % and 47% respectively in the latest national CFSS, 2011. In most surveys, anthropometric deficits vary with ecological zone where stunting is more prevalent in mountains and underweight and wasting are more prevalent in hills and coastal plains. Similarly acute malnutrition rates (wasting), underweight and chronic malnutrition (stunting) are higher in rural than urban areas. Generally both at national as well as at governorate level males suffer more than female from the wasting, underweight and stunting. Regarding age, only three national surveys (DHS 1997, FHS 2003, CFSS 2011) provide enough data on age groups where the overall prevalence of wasting is higher among those below the two years of age while underweight is generally higher among those above two years. Regarding the regional surveys, wasting and underweight were more prevalent in Al Hodeidah (31.7% , 59.6% respectively) and stunting was more prevalent in Rayma (70.2%) .

In conclusion, the above results shows that during the last 20 years, no improvement has been observed in the nutritional status of under 5 children. Furthermore, the levels of stunting and underweight were above the WHO "Critical" level ($\geq 40\%$ and $\geq 30\%$ respectively) and the level of wasting is between the serious (10-14%) and the critical ($\geq 15\%$) levels..

The following recommendations should be considered:
- Establish and institutionalize a routine nutritional surveillance
- Unify nutritional surveys METHODSology through adopting SMART
- Conduct a nationwide SMART nutrition survey to establish a unified baseline
- Evaluate reasons behind static level of malnutrition indicators during the last decades
- Strengthen institutional capacity and encourage research to find "local" casual pathway
    - Facilitate access to raw data of all nutritional surveys for more in-depth analysis

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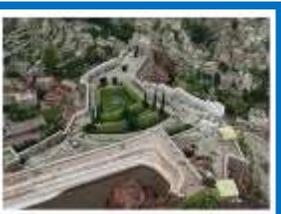
Traumatic injection neuropathy Surveillance, Yemen, 1998- June2012

Ali Ahmed Jaawal

Traumatic injection neuropathy (TIN) is an injury to a nerve "mostly sciatic or radial - caused by unnecessary injection and leading to acute flaccid paralysis (AFP) of the associated limb. Unnecessary injections are estimated to be as high as 75% of the 12 billion injections given globally each year.

Intramuscular injections are common practice in the health care and community setting in Yemen. This study aims at identifying the incidence of TIN from1998 to June 2012 AFP surveillance data and to describe the epidemiology of the disease.

The study was carried out in April 2012 through revising records of all AFP cases from January 1998-June 2012 available at the central level surveillance unit which include: age, sex, governorate of residence, clinical picture, differential diagnosis and final laboratory confirmation. Data analysis performed using Ms-excel and EPI-INFO.

From January 1998 to June 2012 a total of 4,294 cases of AFP were reported. Among them, 759 cases (17.7%) were identified as TIN and the overall rate of TIN was 5.5/1,000,000 < 15 years old children in Yemen with 11 fold increase from 1998 to June 2012. The median age of the TIN patients was 30.0 (Range 1.0-177 months). TIN found to be significantly higher in males than in females (67%: 33%, $p<0.001$).

TIN Rate differs by governorates where it was highest in Al Mahrah Al Hodeidah and Mareb with a rate of 17.3, 12.9 and 10.8 per 1,000,000 < 15 years old children respectively.

In conclusion, higher rates of TIN were identified in Yemen, compared to similar socio-economic status countries e.g. Pakistan :3.38 cases per 1,000,000. Therefore increasing awareness on the community level and training of health care providers to avoid un– necessary injections is crucial to prevent TIN in Yemen.
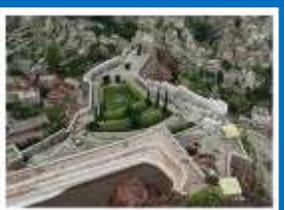
Rubella Surveillance System data analysis, 2008 – 2011

Yaser Aleryani

Rubella virus can cause multiple birth defects, including Congenital Rubella Syndrome (CRS), and may results in fetal loss or stillbirths. Globally, in 2008 the number of CRS cases exceeded 110,000 cases. The highest CRS burden was in the South-East Asia (approximately 48%) and African (approximately 38%). From 1996 to 2009, the number of countries that introduced Rubella vaccine into their national routine childhood immunization programs increased from 83 countries in 1996 to 130 countries in 2009. In 2003 a study among Yemeni pregnant women and females of childbearing age showed that 6.6 and 5.1% respectively remain at risk of acquiring rubella during pregnancy. Rubella vaccine is still not included in Yemen Expanded Programme of Immunization (EPI) schedule.

Rubella surveillance system was integrated in 2005 with measles case based surveillance program as they share common epidemiological features and common preventive measures. This program covers all governorates through the surveillance officers in each governorate with focal points in selected health facilities and districts. The weekly based reports are collected from 500 sites. Samples from patients who have fever and rash are collected with investigations form for suspected cases. Although the investigation form doesn't include any information of rubella symptoms, a total of 3,621 samples were sent to the National Center of Public Health Laboratory (NCPHL)from 22 governorates between January 2008 and December 2011 and were tested for measles and rubella IgM antibodies by using ELISA.

Out of these samples 994 (28 %) were positive for rubella IgM. Rubella incidence was increased from 0.86 in 2008 to 1.66 in 2011 which may be attributed to improvement in the reporting system during the last four years as well as availability of the laboratory reagents for rubella. The reported incidence rate was 0.86, 1.02, 0.84, 1.66 per 100,000 respectively in 2008, 2009, 2010 and 2011. The pattern of disease showed that incidence is highest in late winter and early spring. The most affected age group was from 5 to 15 years but rubella antibodies IgM also were detected in 56 of 158 (36%) of females of childbearing age (15 - 49 years).

The incidence of disease is very varied among governorates with highest incidence in Say'on with 102 /100,000 and lowest incidence in Raymah with 0.9/100,000.The majority of reported cases were from the southern governorates of Yemen which may indicates better reporting from those governorates. The analysis shows that more than one third of reported cases of the reproductive age group found to be seropositive for rubella. Immunizing this important risk group as well as raising awareness among healthcare providers on CRS is recommended. Serological community based survey should be carried out in order to determine the sero-prevalence of rubella antibodies to help designing an appropriate immunization policy.

Measles Case-based Surveillance System Data Analysis Report, Yemen, 2011

Mohammed Ahmed Alnajjar

Measles is still one of the leading causes of death among young children with 355,000 reported cases and 158,000 reported deaths in 2011. In Yemen, recent years witnessed steep increase in measles incidence and measles is still the fourth cause of death in under-five children.

The measles case based surveillance (MCBS) has launched in Yemen in 2007 and this surveillance data analysis was undertaken to describe the epidemiology of measles in the year 2011 and compare the trends over years 2008-2011.

The incidence rate of measles found to be increased from 3 cases per 100,000 populations in 2008 to 13 cases in 2011. A seasonal pattern has noticed with a highest incidence from March to May every year. The year 2011 witnessed measles outbreaks almost in all governorates (especially in Dhmar, Abyan, Aden, Albayda, Saadah, Laheg and Aljawf governorates) with incidence varying from one per 100,000 populations in Almahweet to 103 in Abyan. The most affected age group is 1-5 years old with an incidence rate of 46 per 100,000. Among 2,387 of reported cases in 2011 who are supposed to be vaccinated for measles (i.e. age ≥ 9 months) and their vaccination status is known, slightly more than half were unvaccinated. The number of death cases due to measles was only available for the year 2011, where 74 deaths were reported which gives a case fatality ratio of 2.8%.

The appearance of measles cases approximately in all governorates in year 2011 is most probably due to a real outbreak that resulted from political and civil unrest causing a drop in measles vaccination coverage.

The striking high morbidity and high mortality in some governorates cannot be explained only by difference in vaccination coverage and needs more investigation. The MCBS needs to be evaluated according to CDC evaluation guidelines and a system of frequent crosschecks between vaccination coverage and surveillance data should be developed with feedback to both Expanded Program on Immunization and MCBS. Strategies to increase measles vaccination coverage are also mandatory

Malaria surveillance data analysis, Yemen, 2007-2011

Mohammed Ali Abdullah Saleh

In Yemen Malaria continues to be one of the ten priority health problems. Nearly 60% of the population of Yemen is lives under malaria risk of various degrees, with relatively high population density. Pregnant women and children under-five years of age are the most vulnerable groups at risk of contracting malaria and rapidly developing severity.

A routine malaria data are collected from the available three different sources: National Malaria Control program, National Control Disease and Surveillance, and Directorate of Health Information System. At end of 2009 newly Integrated Malaria surveillance system initiated by the above three data sources. The system depends basically on the budget from the Global Fund. The data firstly collected at the health units, health centers and hospitals for patients attending the outpatient clinics. The form is used for reporting malaria cases, include basic demographic data on the patient, duration of pregnancy for women, diagnosis of malaria (clinical or confirmed by type of test i.e. rapid diagnostic test versus microscopic examination with type of plasmodium species), type of treatment, and outcome (recovery, death). Surveillance staff at health facilities compiles these line lists and send to district where it is summarized and sent to the governorate where it is analyzed and sent to the central level.

The findings shows that percentage of reported malaria cases confirmed by microcopy and rapid diagnostic test (RDTs) shows an increase from 30% in the RMSS in 2007 to 64% in the IMSS in 2001. The most affected age group is under 5 children, which count for about one-fourth of malaria cases and one-third of malaria death with an incidence rate of 7 and 10 per 1000 population in 2010 and 2011. The overall Case Fatality Rate (CFR) was 0.8 per 1000 and 30% of malaria deaths were among female.

In conclusion, the newly established IMSS has made a difference in reducing the rates of under-reporting and lowering the level of un-validated data, mainly of those mixed from clinically and laboratory confirmed cases. The improvement in reporting procedures implemented through an IMSS in 2010/2011 is credited for the increase in the reported cases. The new IMSS still not involving the big private hospitals, except in some governorates.

Therefore, strengthening of the capacities of the focal persons for malaria surveillance in every district is recommended to improve the surveillance system in the country in addition to the quality of malaria data. The coordination with private sector could play an important role in improving malaria surveillance. Evaluation of surveillance system using CDC guidelines is needed to understand the extent of current under reporting and identifying, and addressing possible gaps. Intensified and targeted efforts including insecticide treated nets, indoor residual spraying, and diagnosis and treatment are needed to reduce malaria burden. Plan to involve the private sector in the information surveillance system should be developed.

Analysis of Reproductive Health Data, Yemen, 2006- 2011

Mohammed Qasem

The high rate of population growth in Yemen of around three per cent per year, with more than five children being born to each woman, is not only damaging to the health of women and children; but also one of the biggest barriers to development. Furthermore, women and their infants are insufficiently protected against the risks of pregnancy and childbirth and maternal and neonatal mortality ratios (200,100,000 and 32/1000 respectively) are among the highest in the region.

We analyze the data available at the Reproductive Health (RH) directorate at the Ministry of Public Health and Population (MOPHP) that was collected from health facilities in the governorates for the period of 2006 -2011. The aim is to analyze the main RH indicators and compare it to the RH 2012 Strategy goals.

Variables include pregnancy/delivery/post-partum complications and the five indicators of RH: family planning , Pre-natal care, skilled birth attendance (SBA), Cesarean Section (CS) and post natal care in the year.

Governorates show various level of achievements of RH strategy goals. For example, for SBA only Laheg governorates reached the strategy goals of 47% and 50% in 2010 and 2011 respectively compared to SBA under 16%in many other governorates e.g. Reymah, Saadah, and Al-Jawf. Similarly, only Laheg reached the prenatal care strategy goals with 61% and 66% in coverage 2010 and 2011. respectively. For CS rate only Aden and Hadramout reached the minimum 5% acceptable rate while all other governorates still between 0-2.4%. The post natal care still at low level even in Dhamar which have the highest coverage of 17% as well as the family planning use which is still 28% in Sana'a city which rank first.

Regarding the complications, anemia was the commonest with a highest incidence rate 440/1000 expected delivery in 2010 at Laheg governorate while rupture uterus was the least reported complication with a rate of 2/10,000 expected delivery at national level and 6 in Laheg. Finally, the maternal mortality rate at national level found to be 48 per 100,000 live birth with Hadramout being the highest with 272 per 100,000 live birth. Nevertheless, being a facility based such figures should be cautiously interpreted as it reflect only tip of iceberg.

Therefore, there is a dire need to strengthen RH active surveillance especially for maternal mortality and pregnancy related complication, increase awareness among health workers on the importance of regular and accurate reporting for decision making, and to unify/update RH registers to ensure that it contains all data required to measure RH indicators and strategy goals. Building research capacities is a must to design and conduct research necessary to explain wide discrepancies in RH indicators between different governorates.

Neonatal Status in Yemen, Reproductive Health Surveillance

data analysis, 2006-2011

Maha Obadi

The Reproductive Health (RH) situation in Yemen is challenging and continues to place an unacceptable burden on health and economic development for the country. Maternal and neonatal mortality ratios are among the highest in the region: Three hundred sixty five women per 100,000 live births die as a result of complications of pregnancy and childbirth. The neonatal mortality rate is estimated 37.3 per 1000 live births, accounting half (49.9%) of the infant mortality rate i.e. 74.8/1000 live births, and only quarter of deliveries attended by skilled health personnel and 77% of deliveries take place at home.

The RH department in Ministry of Public Health and Population (MOPHP) was the main source of data collected from health facilities in the governorates for the period of 2006 -2011. The selected data were about deliveries attended by skilled health personnel, low birth weight babies neonatal deaths among live births and stillbirths.

Governorates show varied levels of achievement in deliveries attended by trained personnel. Only Lahej reached the strategy goals, 47% and 50% in 2010 and 2011 respectively. Hadramout was close to achieve the strategy goals, 45% and 44% in 2009 and 2010 respectively. Abyan, Aden, Al-Mahra and Marib showed good achievement, 29% - 39%, comparing to others. Six governorates; Remah, Sana'a, Sa'd a, Sana'a city, Algwf, and Albieda show very low SBA under 16%, which reflect the long way to reach the strategy goals.

According to a report of UNICEF, 50% of neonatal deaths were attributed to low birth weight. Almost 32% of babies born were below2.5 kg of weight. Three governorates showed high LBW above the national level (32%). Sana'a city showed high percentage 33%, 41%, and 36% in 2007, 2009 and 2010. Alhudieda and Almahra showed high LBW in Alhudieda 37.8% and 31.6%, and in Almahra 63.7%, and 54.8% in 2006 and 2007 then a marked declined in 2009-2011.

The 2009- 2011 data was used for stillbirth and early neonatal death analysis. Early neonatal death rate, based on the health facility data, was very low in all governorates, 1/1,000-12/1,000. The still birth rate was high in all governorates, 37/1,000- 44/1000 Live Births, compared to the national average, 23/1,000 Live Births. Only Lahej, Hajja and Sa'da showed low still birth rates.

The coverage of deliveries assisted by skilled attendants was far below the national and international goals. All governorates except one- Lahej- have a long way to go to reach the goal. LBW did not show constant decreased but fluctuated from year to year. The rate of early neonatal deaths are very low as compared to the national level, which reflect the huge number of deliveries occurred in home and outside health facilities and thus not recorded. High rate of stillbirths were attended by skilled and trained person in all governorates, except Lahej, Sa'da and Hajja.

Epidemiological Characteristics of Human Rabies Cases in Sana'a city, 2011

Fuad Mohammed Shamsan

In Yemen, surveillance of National Rabies Control Program (NRCP) has existed since 1990. The reporting period examined in this study was from 1/1/2011 to 31/12/2011. The most affected age group was between 5 to 15 years (52%) and males were also affected mostly (75%). Around 93 percent of the cases were infections from stray dog bites, 90 percent presented with time lag between exposure and onset of treatment period of ≤ 30 days. Lower limbs were the most common site of infecting bites (40%). -Post exposure treatment dose and mortality were significantly associated (P<0.05) and site of bite was associated significantly with the mortality (P<0.05).
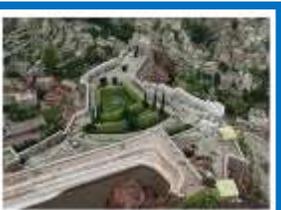
An Epidemiological Analysis of Dengue in AL Hodaidah governorate

Faisal Ahmed Hezam Daraan

Dengue virus infection is increasingly recognized as one of the world's emerging infectious diseases. Al Hodeida governorate has five outbreaks of dengue fever. The last outbreak started in March 2013 and more than 1,000 cases and 6 deaths were reported. There is no active dengue surveillance system. This study was undertaken to estimate the magnitude of dengue in Al-Hodeidah governorate in 2010 to 20013.

We conducted a retrospective study and used data collected during dengue outbreak investigations in 2011-2012, and aggregate data from dengue surveillance system in 2010 and 2013. The data was collected from the central laboratory in Sana'a, and surveillance offices in the MOPH&P and AL Hodaidah governorate. We analyzed the data in EPIINFO and EXCEL program.

During 2010–2013, there were 8,803 cases and 8,562 (97.3%) met suspected DF case definition and 234 (2.5%) cases were met DHF. Most of the cases was in 2011(69%). Age group 16 – 30 years was most affected (42%). Males were more than females, 55% and 45% respectively. 408 samples were sent to a central laboratory and 160 were confirmed case of dengue fever (39.2%). Most of the cases had fever, headache, joint pain, muscle pain. Few had bleeding manifestations and skin rash. An increase in the cases of DF has been observed every year during the time period coinciding with epidemiologic weeks 42-52 and 1- 20, which indicates the seasonal character of the disease, the rainy season. It was also recorded a high number of deaths. Most districts (19 of 26) recorded incidence of varying intensity. In 2011, Alalehya district recorded the highest rate of incidence. In 2013, the highest cases were recorded in Al Zaidi. Seasonality can be observed in DF in AL Hodaidah Governorate, which could be related to climatic conditions.

In conclusion, the climatic conditions could alter the vector/agent cycle, the distribution and abundance of vectors, which causes an increase in the risk of exposure to and transmission of DF. Lack of regular data collection and national standard operating procedures for epidemiologic surveillance are main hindrance to establish standard case definitions for DF and HDF.
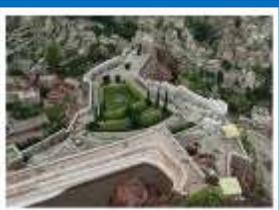
Descriptive analysis of surveillance data on cancer cases at the National Oncology Center, Yemen, 2007

Abdulwahab A. Al-Nehmi

In 2007, the International Agency for Research on Cancer estimated that about 12 million people worldwide were affected by cancer and six millions had died. Although cancer is thought to be a major public health problem in Yemen, the size of the problem and underlying risk factors is not yet well studied. National Oncology Center (NOC) at Sana'a is the main referral center for cancer cases both for diagnosis and treatment. The main purpose of this report is to provide a descriptive analysis of cancer cases registered at NOC in 2007.

Data for the year 2007 available at the cancer registry department in NOC were used. Descriptive analysis of cases by type of cancer, age, sex, site of lesion, and governorate has been done using Epi info 7.

In 2007, a total of 3782 cases were registered with an equal male to female ratio and median age at diagnosis of 50 years that was slightly lower among females than males: 45 vs. 50 respectively. Among females, breast cancer was the most common cancer (23 %) followed by lymphoma (13%) and leukemia (8%), while among males the most common cancers were lymphomas (19%), leukemia (11%), and liver tumors (7%). Of all registered cases, there were 437 cancer cases (12%) aged 15 years old or less with a median age of 7 years. The most common cancer among children were leukemia (24%), followed by non-Hodgkin's lymphoma (17%), and CNS tumors and Hodgkin's lymphoma (10% each).

Although NOC data is not representative of cancer cases in Yemen and is an under-estimate, it provides a general overview of cases that seen at the referral NOC. Cancer is diagnosed at a relatively younger age in Yemen, especially among females and b Breast cancer accounts for about a quarter of cases among women. Yemen needs to strengthen regional as well as national cancer registries to determine the burden of cancer in Yemen as a first step for cancer control strategy. Analytical studies are recommended to understand the risk factors and plan prevention and control for the most common cancers such as lymphoma, leukemia and liver cancers.
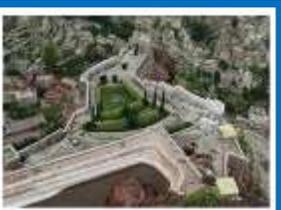
Descriptive Analysis of Tuberculosis Surveillance System, Yemen, 2006-2010
Abdullatif Alwaqedi

The World Health Organization (WHO) declared tuberculosis (TB) as a global public health emergency in 1993. Despite WHO recent report describing a decline in TB morbidity and mortality, the disease remains one of the priority health problems in Yemen and there were an estimated 14,000 new TB cases occurred every year.

We obtained the surveillance data from the National Tuberculosis Control Program (NTCP) that included all new tuberculosis cases diagnosed and reported at the national level from January, 2006 to December, 2010. The aim is to contribute in showing the burden and magnitude of TB problem in Yemen and describe its epidemiological characteristics.

The analysis showed that the TB incidence for all TB cases have decreased during 2006 to 2010 from 42 to 39 per 100, 000 population respectively. Distribution of smear positive pulmonary cases by age group showed that incidence increase with age and majority of cases are occurring among 25-54 productive age groups. Furthermore, an alarming increase in the TB incidence among younger age group <14 years has observed where it has increased from 0.9 per to 3.4 per 100.000 from 2006 to 2010 respectively. During the same period a slight increase in the incidence of relapses from 1.5 to 1.9 respectively has been also observed.

Therefore, in-depth systematic evaluation of NTCP is recommended. Furthermore, an electronic system for documentation and reporting of TB cases should be considered. Encouraging operational researches to answer some of the TB –related important question e.g. reasons for increased incidence among children, increasing number of relapses etc.

b. Executive summaries of outbreak investigations

Outbreak Investigation of Chikungunya and other febrile Illnesses, Al-Hawtah District-Lahj Governorate, March – April 2012

Mohammed Ali Abdullah Saleh

Chikungunya virus (CHIKV) is an acute viral infection transmitted to humans through the bite of an infected adult female Aedes mosquito. In Yemen, the CHIKV was first confirmed in Al-Hodeida governorate in early 2011, the first outbreak of CHIKV fever in Lahj governorate at Al-Hawtah and Tuban districts. On 18 April 2012, a physician working in a private clinic in Al-Hawtah, the capital of Lahj governorate, reported to Lahj governorate surveillance coordinator three patients complaining of fever, headache and severe joint pain not explained by the common infectious diseases in that area. A Field Epidemiology Training Program (FETP) resident was sent to investigation the cases.

The investigation started in April 20th and ended in May 12th 2012. We conducted this investigation to characterize the outbreak and confirm the cause and source of the outbreak. We collected socio-demographics, history of illness, signs and symptoms, sources of infection, mode transmission and laboratory results of the cases identified. We entered data into excel sheet and analyzed with Epi info, Version 7.

There were 234 cases identified. The incidence rate was 7.6% (234/31129) population. The males and females affected were 122 (52%) and 112 (48%), respectively. Twenty five percent of the cases were $\geq$ 45 years of age, and 52 % were $\geq$ 25 years of age. Two cases were CHIK IgM positive (ElIZA) and one case was dengue IgM positive and weak CHIKV IgM positive. The majority of suspected cases 108 (46%) were from one area (fish market area) of Al-Hawtah – more than expected. Around 73% (171/234) of the suspected cases were living in houses where water was stored in open containers. Major case symptoms include fever and headache (100%), arthralgia (95%), and Joint Swelling (73%).

The outbreak was caused by Chickunguna virus and most of the cases were detected near the fish market, where sellers of fish from Al Hudeidah and Taiz sell their goods. Strengthening the surveillance program at all level for efforts to ensure early reporting of the cases are needed. Continuous health education in schools about prevention and control of infection are also essential to detect and control such outbreaks. Enhancement of entomological surveillance and support from authorities has to be developed. Presence of emergency strategy at governorate level for rapid response should be ensured

Measles Outbreak Report in Saada Governorate, 2012

Fuad Mohammed Shamsan

Measles is a highly contagious viral infection. Measles transmission can be prevented through high population immunity (≥95%) achieved by measles vaccination. In Yemen, measles cases were reported during 1989–2002. In 2012, a large measles outbreak occurred in Saada governorate. The measles vaccine coverage among children aged 9–18 months varied widely (27% –49 %) between 2009 and 2010 . In June 2004, violent conflict took place in Saada, where many people lost their lives and 250,000 people were displaced. In May 2008, it was estimated that 77,000 internally displaced persons (IDPs) were in Saada as a result of the conflict. The outbreak affected all Saada governorate. Vaccination campaigns were conducted in Sadaa governorate in April, 2012 to control the increasing cases of measles.

Saada has a population of 838,000. We conducted a retrospective case finding surveillance of measles cases reported   in AL Jamhory and AL Salam hospitals, and main district hospitals, health centers and private clinics in Saada governorate from 1 January 2012 . A measles case was defined as a person having fever, rash, and one of the following: cough, or coryza, or conjunctivitis, an reside in Saada governorate.

Of the 804 reported measles cases, 445 (55%) were males; 359 (45%) were females. One hundred twenty (15%) were laboratory confirmed and 684 (85%) were epidemiologically linked cases. the age groups that were affected mostly were children 3-15 year of age (n=362, 45%) and ≤1 year -olds (n=345, 43%). Among the 362 children 3-15 year of age, 190(52%) were boys and 172 (48 %) were girls. The attack rate was (804/219563 =36.6%). There were 505 hospitalizations and 15 deaths.

In conclusion, this outbreak was caused by an imported measles into the displaced population of children, whose parents had refused to have them vaccinated because of vaccine safety concerns. High vaccination levels in the surrounding governorates and low rates of vaccine failure averted an epidemic. Maintenance of high rates of vaccination coverage, including improved strategies of communication with persons who refuse vaccination, is necessary to prevent future outbreaks and sustain in the process of pre elimination of measles from Yemen. In conclusion, catch-up vaccination campaigns should focus on individuals aged under 5 years-old who have not received two doses of measles vaccine. The outbreak is likely to re-occur, in Saada with low vaccine coverage.
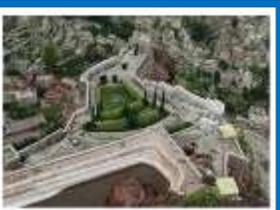
Outbreak investigation of Dengue and CHIK Al-Hodeidah governorate, April 2012

Ali Ahmed Jaawal

Since 2002, dengue has caused multiple outbreaks in Yemen. In October 2010-January 2011, a large outbreak suspected to be dengue was reported in Hodeidah. However, PCR analysis confirmed chikungunya fever outbreak, the first outbreak in Yemen. In April 2012, Hodeidah reported a suspected dengue outbreak. We investigated the outbreak to confirm its etiology and the source of the outbreak. We used WHO case definitions for dengue and chikungunya.

During January–June 2012, 1,148 suspected cases were reported; 212 met only dengue case definition, and 7 met only chikungunya case definition; 847 met both dengue and chikungunya case definitions, and 82 had dengue hemorrhagic fever manifestations. Male to female ratio for all Dengue and all Chikungunya cases were 1.6:1 and 1:1.4 respectively. The incidence rate for all Dengue and Chikungunya was 50.5/100,000, and 37.8/100,000, respectively. The highest incidence rate for (105/100,000) and Chickungunya (90/100,000) was observed in 6-10 years age group for both. All cases reported fever. Over 93% of both Dengue and Chikungunya cases reported joint pain, headache and myalgia. Blood specimens from 189 cases were tested using IgM ELISA; 22 specimens were tested using rt-PCR in Thailand. Data were analyzed in EPI-INFO. Fifty-five (29%) specimens tested dengue IgM positive; and 15 (8%) Chikungunya IgM positive; 4 (2%) were IgM positive for DHF. Six cases were rt-PCR positive for 3 dengue virus serotypes (1, 2, 3) and one case was rt-PCR positive for Chickungunya.

The outbreak was a combination of dengue and chickungunya and the presence of 3 serotypes indicates that future outbreaks are likely to be severe. Therefore efforts to prevent dengue need to be strengthened including early outbreaks detection and response; increased community awareness; enhance surveillance system and rapidly eliminate infected adult mosquitoes and breeding sources.

Dengue Outbreak in a Refugee Camp in Haradh City at the Border with Saudi Arabia, May 201

Ahmed Hamood Ali Al Shahethi

Dengue is an arthropod-borne viral disease that has emerged as public health problem in Yemen. Since 2002, when dengue was confirmed in Yemen, it has spread to over 10 coastal governorates. At the end of April 2012, the department of surveillance and diseases control was notified by Hajjah surveillance officer of 2 fatal cases from dengue like illness (DLI). Both fatal cases were refugees in the camp at Haradh city. A Field Epidemiology Training Program (FETP) resident was sent to investigation the cases.

The investigation started in May 5th and ended in May 28th 2012. We conducted this investigation to characterize the outbreak and confirm the cause and source of the outbreak. We collected socio-demographics, history of illness, signs and symptoms, sources of infection, mode transmission and laboratory results of the cases identified. We entered data into excel sheet and analyzed with Epi info, Version 7.

There were 220 cases identified. The incidence rate was 163 per 100,000 population . Most of the cases, 184 (88%), were males, and 15-24 years old (60 %) with a median age of 19 years. 106 were hospitalized, 4 were confirmed (ELISA IgM) and 3 cases died. All of the cases were Ethiopian refugees. Major case symptoms include fever (100%), followed by headache (92%), Joint pain (84%), and muscle pain (73%). Abdominal pain and jaundice were very uncommon. Muscle pain, retro-orbital pain; petechiae and bloody diarrhea were significantly (P <0.05) more common among patients with laboratory-positive dengue infection than persons with negative results. The epidemic curve revealed that first half of the cases started at January 2012 . Of the 120 cases tested, 51 (42.5%) were positive. Thirty eight (75%) of the positive cases were from Haradh City, 13 (34%) from the refugee camp and 25 (66%) from the city. One case was rt-PCR serotype -1 positive; similar to that isolated from Djibouti in 1998 and Saudi Arabia in 2006. The outbreak was due to dengue sero-type-1.

The presentation of dengue hemorrhagic fever is compatible with secondary infection. The high burden of disease among males and immigrants suggests outdoor transmission. Sentinel surveillance is needed along border towns for early detection and response to outbreaks. There is a need to ensure early notification of DF outbreak together with sensitization of the physicians & health workers and provision of diagnostic supplies. Strengthening the control efforts to prevent dengue spread to other governorates, including early detection and response is prerequisite.

Outbreak investigation in

Qufl Shamr, Hajja Governorate, Yemen, May, 2012

Mohammed Ahmed Alnajjar

Measles is a highly infectious vaccine-preventable disease and leading cause of death among children. Prior to 2011, measles was at elimination phase in Yemen however, as vaccination coverage dropped to 71% due to political unrest several outbreaks reported. In May 2012, Qufl Shamr district reported sudden increase of cases of fever and rash. We investigated the outbreak to confirm diagnosis and recommend prevention and control.

WHO case definition for hemorrhagic fever and measles were used. We identified cases through active household search from May 4th to 28th where cases/guardians interviewed using standard form. Serum specimens were tested using measles IgM ELISA.

Sixty cases fulfill the case definition with mean age of 6 and male to female ratio of 1:2. Common symptoms were fever (100%), rash (68%), difficulty breathing (32%) and diarrhea (30%). Hemorrhagic manifestation and mouth ulcers present in 20%. Measles IgM was positive in 12 cases. Vaccine coverage among confirmed cases was 5% compared to 46% among non-confirmed (P-value =0.001). Seven deaths (71%) reported among under-five children with case fatality of 12%. All deaths were from Alholog village and unvaccinated. Out of seven deaths, four were epidemiologically linked to confirmed cases.

In conclusion, this is the first measles outbreak in Yemen with high fatality rate. All deaths were unvaccinated for measles and most confirmed cases from area where no vaccination services or vitamin A are provided. There is an urgent need to improve measles vaccination coverage to prevent more cases and deaths. Sensitive and timely surveillance system is essential to ensure quick outbreaks identification and response.

Outbreak investigation of dengue fever and hemorrhagic dengue fever , Ghail Bawazeer district, Hadramout governorate, May 2012

Faisal Ahmed Hezam Daraan

Dengue fever (DF) has caused multiple outbreaks in recent years in Yemen. Hadramout Governorate especially Ghail Bawazeer district had several outbreaks since 2005 due to adequacy of water (the meaning of Ghail) as breading site for the mosquito. In July 2012, an outbreak characterized by fever was reported from Ghail Bawazeer district. We conducted an investigation to characterize the outbreak and confirm the diagnosis.

We reviewed reports of fever and hemorrhagic fever in the surveillance system, laboratories and hospitals from May- July 2012 using WHO case definition for DF and dengue hemorrhagic fever (DHF). 203 cases were reviewed for clinical and demographic data. 59 blood specimens were collected and tested using IgM ELISA.

Of a total 203 cases reviewed , 98% met the case definition of dengue, 2% were DHF, 56% were males with 1% case fatality. Most affected age groups were 10-19 years (38%). 69% of cases was from Ghail Bawazeer city with 32/10,000 incidence. Of the 59 specimens tested, 64% were ELISA positive for DF.

The investigation confirmed a dengue outbreak in Ghail Bawazeer district. The slight increase of cases among males and young adults suggests outdoor infection. As more than two third of cases were reported from Ghail Bawazeer city, efforts to contain dengue to prevent spread to other part of district are strongly recommended.

Dengue Fever Outbreak Investigation in Taiz Governorate, June 15 – September 17, 2012

Mohammed Qassim

The first dengue fever outbreak in Taiz occurred in May 2005 with 253 cases confirmed. In May 2009 another large outbreak occurred with 928 confirmed cases, and in January 2010, an outbreak was reported with 58 cases.

On 28 August 2012, the Taiz Department of Health notified the MOPH&P an increase of the number of febrile illnesses in Altaezia district, and a case with bleeding manifestation died in Taiz city. Dengue fever was suspected, and we started an investigation on 2nd of September. An active case finding was instituted in major hospitals in Taiz. We used WHO case definition for dengue and interviewed cases in Altazia and Sennh village of Almedfer districts. We took blood samples for lab testing. An entomological survey was also conducted. There were 171 suspected cases. All cases were lab tested and 81 were confirmed of dengue (33 IgM and 48 cases IgG).

The incidence rate was 2.7/100000 in Taiz Governorate. The age group 21-30 years was mostly affected among the confirmed cases 25% (20/81). The median age of all cases was 18 years and males outnumbered females (ratio 3:2). Five cases had bleeding manifestation, and two cases died, with a case fatality rate of 1.2 %. The malaria program started spraying campaign in week 38. The entomological investigation identified abundance of the vector Aedes Egypti.

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Rabies Outbreak in Hodeidah Governorate, September 2012

Yaser Aleryani

Rabies is endemic in Yemen. Dogs are the main reservoir of rabies. Annually, up to 7,000 people are exposed to animal bites in Yemen with 30 annual deaths. In September 2012, team from the FETP was sent to investigate a suspected rabies outbreak in Hodeidah governorate and take necessary actions. The aim of investigation is to describe the outbreak and make necessary recommendations for control.

WHO case definition was used for collecting data from Rabies Control Program Center (RCPC) and Regional Veterinary Laboratory (RVL) in Hodeidah, from 1st of June to 12 of September, 2012. Demographic data such as gender, age, and place of residence and laboratory results of patients were coded. A total of 172 of Probable exposure (PE) cases were analyzed and 25 head of animals were tested for rabies using Direct Fluorescent Antibody (DFA) test. The data shows that 71% of victims were males and the most effected age group was from 6 to 15 with an incidence rate of 10/100,000. The highest peak of epi curve in the week 22 and 23 (June) with 20 and 22 cases respectively. The high incidence was in Beit Al-Faqih (24 /100,000) and the lowest incidence in Alguenaos (1/100,000). The percentage of cases that got 5 doses of post-exposure vaccine (PEV) were only 9% compared to 97% for 1 dose. Out of total 25 animal samples, 19 (76%) were positive for rabies. Dogs were the main animals (80%) involved in the attack and the had the highest (84%) positivity for rabies.

This study showed poor compliance of patients to post-exposure prophylaxis which needs mass awareness raising among the public about the risks of rabies and the importance of treatment. As dogs are the major transmitting agent of rabies to humans so studying the population size, age/ sex structure, movements of dogs, is recommended to improved control strategies. Also standardized the forms for data collection/ reporting and improve the cooperation between RCPC and RVL is needed.

Pertussis outbreak in Jahalah subdistrict January-March 2013.

Abdulwahab AL-Nehmi

Pertussis, or whooping cough, is an acute highly contagious infectious disease of the respiratory tract. Pertussis outbreaks still reported in some countries in the region of Middle East and North Africa. In Yemen, vaccination against pertussis is incorporated into the schedule of the routine vaccine for kids. On 15th of March 2013, a suspected whooping cough outbreak in Jahalah subdistrict was notified. Tens children with severe episodes of cough associated with whooping and post-tussive vomiting were reported and 3 deaths. We conducted an investigation to verify the outbreak and source of infection. A cross-sectional study was conducted using the standard investigation form for pertussis. CDC clinical case definition for pertussis was used. A total of 41 cases met the case definition, of whom23 cases (56%) were females. The mean age of the cases was 44 months range (4-144 months). The most affected were children aged less than 49 months. Only 3 cases (7%) received a single dose of vaccination against whooping cough during the outreach campaign. Paroxysms of coughing as well as post-tussive vomiting were reported in all cases. Half of the cases had a whooping after paroxysms of cough, while one-third cough was accompanied by cyanosis. Post-tussive apnea was reported in 20% of cases. Three cases, aged 6, 24 and 48 months, died. The attack rate was 27% and the case fatality rate was 7%. For all cases and high risk contact children, antibacterial treatments were initiated.

An outbreak of pertussis in Jahalah was clinically confirmed. Lack of vaccination was the main risk factor for this outbreak. High immunization coverage should be instituted.

Pertussis outbreak in Monabeh district-Saada governorate, Yemen 2013

Abdullatif Alwaqedi

Aalemshaikh bordering with Saudi Arabia, is a region of Monabeh district in Saada governorate (suffering violent conflict since June 2004), which suffers, as all other parts of governorate, from lack of services and low vaccination coverage. During April-May 2013 an increased number of respiratory tract infections mostly diagnosed as whooping cough in the district occurred.

A team of FETP members called by MOPH and WHO Yemen investigated this event during 20 to 24th of May2013. We reviewed reports and notification of outbreak and field investigation survey using a simple line list for all possible cases.

A total of 48 met the cases definition. We interviewed 4 new cases and 44 old cases, and all were empirically treated, and vaccination given to susceptible children. The overall incidence for respiratory infection during April/May period was 4.4 per 1000 population. The cases were diagnosed clinically and no confirmed agent determined.

Investigators recommend that in Saada governorate and regions health system should be rebuilds and strengthen the surveillance system.

Chickenpox outbreak in Sana'a Capital city, September 2013

Nabiha Abdulrahman Alabhar

On Wednesday 25th of September a notification of an outbreak of most likely chicken pox was received by the Ministry of health. A team of FETP member and local health officers was sent to investigate the outbreak. Chickenpox is a highly contagious viral illness that remains to be a major childhood disease, characterized by mild fever and vesicles filled with fluid appears in crops over the entire body. Although chickenpox outbreaks occur so frequently in Yemen but still data is lacking in terms of epidemiology. We report here the description of the chickenpox outbreak investigation.

The objectives were to control the spread of the infection and to describe the epidemiological pattern of outbreak according to disease history.

We defined a case of chickenpox as a person with acute onset of diffuse (generalized) macula-papulo-vesicular rash, without other apparent causes and with onset of fever during 5-25 September 2013. A simple line list was formed using EPIINFO for analysis. The outbreak was intervened. Medications were prescribed for the patient and initiated health education for the families to contain the outbreak.

The results showed a total of seven cases occurred in the outbreak. The attack rate was 0.081% (7/8,599) for all cases while the attack rate for under 15years of age was 0.14% (6/4,300). The age of the cases ranged from 5 to 21 years (median = 9 years), the most affected 6 (85%) were aged <15 years. The male to female ratio was 3:4.The reported onset of rash illness ranged from September 6 to 23, no patients were hospitalized. All cases suffered of fever and half of them had sore throat. The main conclusion that can be drawn is that chickenpox is serious communicable disease affecting younger age group that needs to be controlled. Therefore, efficient surveillance system that can generate early warning signals should be launched and the needs for a long-term strategy for chickenpox vaccines should be considered.

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Rubella Outbreak of Baharan Village, Sana'a Governorate-Yemen, November to December 2013

Maha A. Obadi

Rubella is a contagious viral infection which often affects children and young adults. Vaccination against Rubella is not currently included in the Expanded Program on Immunization (EPI) in Yemen. Rubella infection in pregnant women may cause congenital rubella Syndrome (CRS), which is of public health concern due to its severe and fatal outcomes. There is no specific treatment for rubella but vaccination of all children is the most effective METHODS to prevent this incurable disease. An outbreak occurred in Baharan village, Sana'a governorate on 16th November 2013. The objectives of the investigation were to identify the outbreak, determine its extent and to recommend suitable action for prevention.

Cases were collected from records and investigation forms in the health facility. The case definition used: any generalized rash illness of acute onset with fever during the period of 16th November to 22nd December in Baharan village. A descriptive analysis of cases by age, sex, clinical manifestation and epidemiological information were performed, using EPIINFO.

Thirty six suspected cases were reported from Baharan from 16th Nov-22nd Dec 2013. Twenty six cases met probable cases definition and three were confirmed. The first cases were two siblings who had contact with a suspected rubella case in another village nearby. The incidence rates were 87, 98, 73/ 1,000 among 1-5 years, 6-10 years, and 11-15 years age group. 61% of case-persons were girls. All cases had mild symptoms of maculopapular rash and fever, and 78% reported conjunctivitis, 75% runny nose, and 50% cough. Out of 5 serum samples tested, 3 had anti-rubella IgM by ELISA.

All cases were between 1-15 years old, mostly girls. The outbreak reflects the urgent need for introduction of rubella vaccination and establishment of surveillance of Congenital Rubella Syndrome.
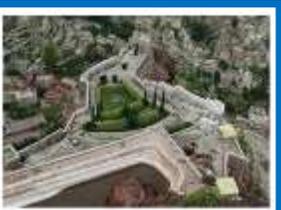
7. Abstract by track

a. **Abstracts of planned studies**

Immunization status of 12 – 23 months aged children and factors affecting it in rural districts of Alhesen and Nehem, Sana'a Governorate, 2013

Mohammed Ahmed Alnajjar

BACKGROUND

Despite increase in the global immunization coverage, up to half of Yemeni children still left unvaccinated especially in a difficult to reach areas. Nearly one third of total deaths and large number of disabilities among under-five years Yemeni children is due to vaccine preventable diseases. The aim is to determine immunization coverage and factors affecting it in rural districts of Alhesen and Nehem, Sana'a Governorate.

METHODS

We conducted a cross-sectional study from October to December, 2013. Through using a multistage cluster sampling, a total of 421 children aged 12-23 months from 21 villages were randomly selected. Every child's mothers was interviewed with a predesigned questionnaire covering demographic, knowledge, attitude and practices regarding vaccination as well as the immunization status of her child.

RESULTS

Only 39% of children were fully vaccinated and 45% partially vaccinated by card or recall with Nehem district, having much lower full vaccinated compared to Alhesen : 24% and 51% respectively. Fathers' occupation, mothers knowledge on benefit of vaccination and age for starting vaccination, and availability of health facility were significant predictors for both vaccination status and completing vaccination. Furthermore, mothers knowledge on vaccination, age at vaccination finishes, fathers education, children who came from small family and high monthly income, and having vaccination card were only significant predictors for completing vaccination. The main reason for un-vaccination and not completion of vaccination was the health worker did not reach villages to give vaccination followed by lack of a nearby health facility.

CONCLUSION

The immunization coverage among 12-23 months aged children in both districts is far below the national target of 90%. Outreach may create dependency among community and when irregular may leads to high partially vaccinated or even unvaccinated children. Sana'a governorate and Nehem and Alhesen districts health offices should work to raise community awareness should plan and regularly conduct outreach activities especially in areas with difficult access to health facilities.

 Key words: vaccination, coverage, un-vaccination, outreach, Yemen
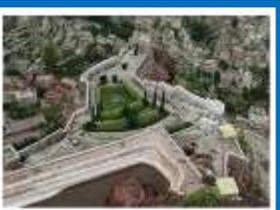
Immunization coverage of 12 – 23 months aged children and factors affecting it in Ateq city, Shabwa Governorate, 2013

Ali Jaawal

BACKGROUND

Low immunization coverage leads to higher risk of dying from vaccine-preventable diseases among children. In Shabwa governorate EPI program reported that the Penta 3 coverage in 2012 was only 71% and in Ateq capital city it was 79%. The aim of this study is to identify the risk factors associated with un-vaccination in order to design interventions that overcome these factors and reach the target 90% vaccination coverage.

METHODS

A cross-sectional survey among children aged 12- 23 months in Ateq capital city, Shabwa governorate was conducted. A multistage cluster sampling was used to select houses. Data on 400 children aged 12–23 months from 400 representative households were collected using trained nurses. The data collectors assessed the vaccination status of the children based on vaccination cards or mother's verbal reports using a pre-tested structured questionnaire through house-to-house visits.

RESULTS

Although 94% of mothers had heard about vaccination, only 55% of children aged 12-23 months were fully vaccinated, 24% were partially vaccinated, and 21% of children were un-vaccinated. The main source for information about vaccination is TV compared to only 19% through health workers. The following mothers' knowledge-related factors play an important role in vaccination status: age to start and to complete vaccination. Other socio-demographic factors that are also significantly associated with vaccination status are: mother's education, mother's age, family size, birth at health facility, and father's education. The main reasons for non-immunization are lack of outreach services and believe that immunization could hurt the child or of no benefit.

CONCLUSION

Complete immunization coverage among children aged 12–23 months remains far low below the national target. As mothers' knowledge about vaccination found to play an important factor in immunization coverage, raising awareness activities should be strengthened. Furthermore, outreach that may create dependency should be limited to difficult to reach areas and community should be encouraged to use fixed health facilities.

Key words: immunization coverage, outreach, Ateq city, Yemen
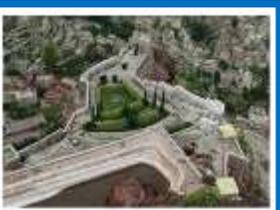
Unintentional injuries among 9 to 12 grades schoolchildren in Sana'a Capital City,Yemen,2012

Ahmed Hamood Ali Al Shahethi

BACKGROUND

Childhood injuries are growing public health problem representing about half of deaths among 15 to 19-year-olds. Schoolchildren are nine times more likely to sustain unintentional injuries. The aim is to describe unintentional injuries pattern and associated factors among schoolchildren in Sana'a city.

METHODS

Students at grades nine through 12 were selected through multistage probability sampling. Self-administered questionnaires used where students asked to report unintentional injury required medical attention in past 12 months. The questionnaire also covered demographic and socioeconomic characteristics.

RESULTS

Injuries from falling down was the leading cause of injuries (48%) and extremities were most frequently injured (65%). The annual overall injury rate was 48 per 100 students where males had significantly higher rate than females (54 vs. 42, OR:1.6 ; 95% CI : 1.3 – 2.0). The injury incidence rate slightly decrease with increasing age (i.e. from 49 per 100 students aged ≤ 16 years to 47 per 100 students aged ≥ 17 years) however, the difference is not statistically significant. The commonest location for injury was at home (43%) followed by school (28%). The first cause of injuries is falling down (48%) followed by transportation (13%). Students who comes from large families (≤4 children) had a higher injury rate (52% vs. 45% , OR: 1.4 ; 95% CI: 1.1 – 1.7). Injury's related activity significantly differs by gender where males has higher injuries than females during sport (24% vs. 6% ; OR: 5.3 , 95% CI: 2.8 – 10) while females has higher injuries during home chores (14% vs. 4% ; OR: 4.7, 95% CI: 2.3- 9.4). The commonest location for injury among males was inside school (32%) and from-to-school (26%) while among females the commonest location is at home (59%). Parent's education and family income found not to be significantly associated with injury's risk.

CONCLUSION

Unintentional injuries among schoolchildren should be recognized as public health concern in Yemen. Understanding pattern and socio-behavioral determinants will guide future interventions.

Key words: Unintentional injuries, schoolchildren, associated factors, Yemen

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Knowledge, attitudes and practices regarding dengue fever among adult population of high and low endemicity villages, Al Hodeida governorate, Yemen,2013

Fesal Daraan

BACKGROUND

Al Hodeida governorate has five outbreaks of dengue fever. The last outbreak started in March 2013 and more than 1,000 cases and 6 deaths were reported. The objective of this study is to assess the level of knowledge, attitudes and practices (KAP) regarding dengue fever in people living in high and low endemic villages and assess their differences.

METHODS

A cross-sectional KAP study was conducted in districts with high and low dengue endemicity. A multistage sampling METHODS was used. We selected randomly 10 villages from districts with high dengue endemic districts and 10 villages from low endemic districts. We interviewed, face-to-face, a member in 400 households using pretested questionnaire.

RESULTS

There were 400 respondents (76% males, 24% females). About 87.7% of the respondents had heard of dengue fever and 62% reported that mosquito was responsible for the transmission of dengue. Only 14% knew that mosquito bites at the day time and 89% reported that fever is a symptom for dengue. Most prevalent preventive METHODS was use of mosquito nets and cover water rafting places around homes with sand. Neighbors and radio were the important source of information for dengue.

CONCLUSION

There is a need to make villagers and slum people aware of different preventive practices and reduce this knowledge application gap. Thus, understanding people's perception and their practices could help in identifying the target areas for control dengue outbreaks. Further studies correlating the association between knowledge and its effectiveness against dengue will be helpful in demonstrating the implications of awareness campaigns.

Key words: KAP, Dengue, Yemen

Epidemiology of unintentional injuries presented at emergency department in Al-Nasir governorate hospital, Al Dhale Governorate, Yemen, 2013

Mohammed Ali Abdullah Saleh

BACKGROUND

Unintentional injuries are growing public health problem in most developing countries, including Yemen. Injuries are responsible for about 5% of the total mortality in the Middle East and North Africa region, of which 9% are caused by unintentional injuries. However, the burden and pattern of injuries in Yemen are poorly known and not well studied. The aim is to assess the epidemiology of unintentional injuries presented at the emergency department of Al-Nasir governorate hospital in Al Dhale governorate. Results will also contribute in designing any future intervention or prevention programs

METHODS

From 1 November 2013 to 30 January 2013 a descriptive cross sectional study using a modified WHO unintentional injury questionnaire were conducted by trained interviews using a face to face interview with injuries 'victims at the emergency department of Al-Nasir general hospital, Al Dhale Governorate,

RESULTS

During the three months study period, a total of 731 cases reported to the hospital emergency department which gives an incidence rate of 4.9 per 1000 per year. The majority of the victims were: males (86% vs. 14%), among the 10-29 year age group (61%), from Al Dhale district, and were students (36%). The overall case fatality rate is 1.6%. Most of cases 421(58%) reported from. The Injuries from transportation were commonest: 45%, followed by falling down: 40%. More than half of injuries took place at street/road and one third at home.

CONCLUSION

Unintentional injuries should be recognized as a public health concern in Yemen. A routine hospital based unintentional injury surveillance system should be launched for better understanding of unintentional injuries epidemiology and to design a proper prevention strategies.

Risk Factors for Stillbirths in Al-Sabeen Maternity Hospital, Yemen, 2013

Maha A. Obadi

BACKGROUND

About 2.6 million stillbirths worldwide occur every year with more than 7,300 stillbirths every day, which places stillbirth at the fifth on the list of causes of death worldwide. Yemen has the highest stillbirth rate of 23/1000 live birth among Arab countries.

METHODS

The aim of the study is to assess the maternal, newborn, and service-related risk factors for stillbirths at Al-Sabeen Maternity hospital, in Sana'a city during October 2013-January2014. A case control study was conducted in the labor ward and interviewed cases who are women delivered stillbirth after 24 weeks of gestation and controls who delivered singleton live births in the same period.

RESULTS

The stillbirth rate was 44.6 per 1,000 total births, the stillbirth was high among illiterate mother 43% (42/99) than mothers with at least secondary education 25% (13/53), and highest among mothers older than 35years 69%(9/13). The major risk factors for still births were congenital malformation, odd ratio (OR) 33.6 (CI, 4.3-250), underweight babies OR 19.4 (CI, 9.88- 38.1), preterm delivery OR 14.4 (CI 7.58- 27.48), muconium stained OR 10 (CI, 2.9- 27.8), umbilical complication OR 8.32 (CI 2.95-23.48), prolonged labor OR (6.13, (CI, 3.14- 11.94), mother working OR 37 (CI 1.1- 13.2) and anemic mother OR 3.6 (CI 2.0- 6.3). Higher education of the mother and at least 4 antenatal care visits were protective factors against having stillbirth.

CONCLUSION

Risk factors associated with stillbirths are amenable to intervention. Most of the stillbirths were preventable by improving women's education and compliance to antenatal care. Encouraging women to deliver at health facilities and better management of obstetrical complications may help reduce the burden of stillbirths in Yemen

Keywords: Stillbirth, risk factors, Yemen

Safe injection practice and knowledge among health care workers at Amran governorate hospitals, 2013.

Abdullatif Alwaqedi

BACKGROUND

Unsafe injection practices are common worldwide especially in developing countries. This correlates with a high risk of blood transmitted infections (e.g. HIV, HBV, HCV etc.) and other local infectious and traumatic conditions e.g. abscesses and sciatic nerve injuries etc. In Amran Governorate two main governmental hospitals and two main private hospitals was designed in a comparative cross-sectional study to observe injection practices.

METHODS

We conducted a comparative cross-sectional survey of all the eligible health workers in two public and two private hospitals in Amran governorate in 2013, who are directly involved in patient care. We used an observation checklist and interview all health workers in these sites, using a structured pretested questionnaire.

RESULTS

A total of 222 health workers interviewed, 174 (78%) were injection dispensers and 48 (22%) prescribers. The majority of dispensers mentioned HBV, HIV and HCV 99%, 91% and 87%, respectively, as the main diseases transmitted by unsafe injection practices. Seventy five (43.3%) of health workers reported that they recap needles after injection to protect others (e.g. cleaners) and 13 (7.5%) think that they had a disease related to injection. Only 9 (5.2%) had training in injection safety and 99 (56.9%) had at least a dose of hepatitis B (HB) vaccine. The prescribers vaccinated for HB was 70.8%, and 19% prescribe injections due to patient or patient's family demand. The results will be further analysed and updated.

CONCLUSION

The knowledge in general is good except for recapping and immunization among health workers coverage is low. As training found to be weak, more training activities for health workers is needed. Launching an immunization campaign among health workers should a priority.

Key words: Health workers, Safe injection practice, knowledge, Amran, Yemen

UNINTENTIONAL INJURIES: MAGNITUDE AND FEASIBILITY OF COLLECTING DATA. YEMENI HOSPITAL

Nabiha A. Alabhar

BACKGROUND

Unintentional injuries are a major public health problem, increasing in most developing countries, including Yemen. A large proportion of injuries are caused by road traffic accidents. In 2010, 18,407 traffic accidents injuries were reported in Yemen, 87.7% involved men, causing 2,735 deaths, and 87.2% were men. The burden and pattern of injuries in Yemen are poorly known; therefore we assessed the feasibility of collecting unintentional injury data to better understand its epidemiology and help plan prevention programs.

METHODS

We collected unintentional injuries data using the WHO case definition and a modified WHO questionnaire. From April-July, 2012, trained volunteers collected data from individuals who met the case definition and presented at/or admitted to Al-thawra hospital.Epi info was used for analysis.

RESULTS

A total 887unintentional injuries were collected,248cases (28%) ages 20-29 years with mean age 26.The Male: Female ratio was 5:1.1.The most common cause of unintentional injuries was traffic accidents with297 (33%); odds ratio for traffic accidents in age group of younger than 10 years compared to all age groups2.3 ,95%CI (1.3-4.1) p value< 0.0024.Injuries resulting in fracture and joint dislocation, 27%,(24% male, 40% female),cuts and open wounds,26 %, (28% male, 21% female).Most injuries,42%,occurred at road and 33% at home. Most injured were students, 35.4%.Most deaths, 90.0%, occurred due to traffic accidents with odds ratio of20.5 compared to other causes of death CI (2.6-161) P value < 0.00006.

CONCLUSION

Surveillance for unintentional injuries is feasible in major hospitals. Young adult males are at high risk for road traffic accidents and students are at high risk for falls. We recommend instituting hospital based surveillance using a standardized instrument to generate data to provide planners and policy makers with information needed for prevention and control measures.

Key words: unintentional injuries-feasibility- data collection- Yemen.

Knowledge, attitudes and practices relating to cholera among cholera-prone and none-prone populations, Abyan governorate, Yemen, 2013

Mohammed Qassem

BACKGROUND

Abyan governorate was recurrently affected by cholera outbreaks since 1970. The 2011 epidemic, resulted in 14,000 registered cases and 130 deaths, of which 70% were localized in Khanfar district. Control of cholera can only be effective if perceptions and practices of the community relating to cholera are well understood. The aims is to assess the knowledge, attitudes and practices (KAP) relating to cholera among population residing in a high cholera-prone and non-prone areas.

METHODS

A cross sectional KAP surveys were conducted in Hafat Gader Alla, which is highly cholera-prone, and Al Methaleth which is known to be none-cholera- prone. 199 randomly selected household care takers were interviewed using a structured questionnaire with open and closed-ended questions covered socioeconomic, Water Sanitation and Hygiene (WASH), and KAP.

RESULTS

Regarding the socioeconomic status, illiteracy, low income, overcrowdings, found to be significantly higher in cholera prone area: OR 2.3, CI: 1.3-3.4; OR 28:CI: 12-63, OR 13.2, CI: 7.5-23 respectively. For WASH, families not treating drinking water, have only one latrine, more than two families sharing the same latrine are also found to be significantly higher in cholera prone area: OR 13, CI: 4.8-33., OR 30.6, CI: 17-54, OR 13, CI: 3.9-43. Availability of water and soap at hand washing facility, washing hands after toilet, and cleanness of water container were also significantly lower in cholera prone area: OR 3.3: CI: 2.1-5.1, OR 4.7, CI: 3.0-7.2, OR 4.5: CI: 2.6-7.8.

Level of knowledge about cholera is also significantly better in cholera prone area e.g. those who know that cholera is causing diarrhea (OR 2.8, CI: 1.6-3.8) or vomiting (OR 2.4CI: 2.8-4.4). Regarding cholera-prevention measures those mentioned treating water before drinking and wash fruits and vegetables before eating were significantly lower in cholera prone area: OR 4.1, CI: 1.7-9.7, OR 8.1, CI: 4.1-16. The prevalence of diarrhea within the last two weeks is significantly higher in cholera prone area: OR 2.1, CI: 1.3-3.3. The most desirable channel for health education is TV and mobile truck with megaphone.

CONCLUSION

Although residents of cholera prone area have better knowledge about cholera, they come from lower socioeconomic status, have poorer WASH indicators, and has higher prevalence of diarrhea. Health education together with improving WASH practices are the corner stones for any cholera prevention.

Key words: Cholera, KAP, WASH, Yemen

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Recovery rate and its determining factors among children aged 6 months - 5 years who were treated in the Severe Acute Malnutrition program, Hodeidah, Yemen, 2013

Fuad Mohammed Shamsan

BACKGROUND

Outpatient Therapeutic feeding Program (OTP) brings the services for management of Severe Acute Malnutrition (SAM) closer to the community by making services available at decentralized treatment points within the primary health care settings, through the use of ready-to-use therapeutic foods (RTUTF). Little is known about the program outcomes in Yemen. This study aim to describe the program indicators for SAM children aged 6 months - 5 years who were treated in Hodeidah OTPs.

METHODS

A retrospective cohort study was conducted on 819 children who had been managed for SAM at randomly selected 12 OTP health facilities from January, 2013 to December, 2013. The study relied on information from SAM cases records that covers demographic characteristics, anthropometries, RTUTF, medical problems, and routine medications intakes.

RESULTS

Half of the SAM cases were among 0-11 age group with no significant gender difference and about half them is coming from poor socioeconomic status. Only 57% were admitted to the program at the recommended < -3 Z score cut off and 42% were discharged while their Z score still < -3. The common complication reported was diarrhea (25%) followed by fever (14%) and cough (13%). The median length of stay in the program is 40 days and the median time needed for recovery was 5 weeks. The recovery, defaulter, mortality and the median weight gain were 57%, 20%, 0.3% and 2.9 gm/kg/day respectively. The recovery rate for children with diarrhea and failure to gain weight was only 25% and 10% respectively. Children who took amoxicillin had 42 % more probability to recover from SAM as compared to those who didn't.

CONCLUSION

The OTP is partially successful. Poor implementation of admission and discharge criteria, inadequate management of children with comorbidities and missing information in the patient's card are major threats for the program effectiveness. The stakeholders should focus on developing capacity of the OTP providers on criteria for admission and discharge to the program, proper management of SAM cases especially for those with comorbidities, and efficient recording of patients' information at and admission and follow-ups.

Key words: OTPs, SAM, Recovery rate, Yemen

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Unintentional Injuries in the three References Laboratories- Sana'a, Yemen 2013

Yaser Aleryani

BACKGROUND

Laboratory staff works in a risky environment. They are exposed to hazard materials, unintentional injuries from needle sticks, sharp objects, chemicals, biological agent and hot materials. Globally, three million laboratory personnel experience injuries each year. The epidemiology of unintentional injuries in medical and biological laboratories in Yemen is not yet investigated. The aim of this study is to assess the magnitude and epidemiology of unintentional injuries among the staff in three reference laboratories in Sana'a, capital of Yemen.

METHODS

We conducted a retrospective study in three reference laboratories, National Central Public Health laboratory (NCPHL), Central Veterinary Laboratory (CVL) and Police Hospital laboratory (PHL) in Sana'a from October 2012 to October 2013. A total of 181 laboratory workers were eligible for the study. We used a pretested structured questionnaire to collect the data. The data was coded, cleaned and analyzed using Epi Info7. The data was presented in frequency tables and graphs.

RESULTS

The overall response rate was 51%, and 93 observations were available for analysis. Of these 51 (55%) of the respondents had injures, 32 (34%) had one type of injury and19 (20%) had between one to five types of injuries. Needle sticks was the highest incident 27 (29%) and the lowest was contact with other patients 5(5%). Only one-third of the study population received one or more training courses inn Lab Safety Procedures. Risk of get injured decrease with increased years of work experience. The highest incidence rate was 30% among new employees, (0-5) years of experience, and the lowest was 4% among employees with more than 20 years of experience. Only 11(12%) of injuries were reported to Safety Officer in the lab.

CONCLUSION

Reducing injuries among laboratory technicians is one of the public health problems neglected. The study indicated the need of targeted interventions to laboratory technicians to increase their awareness on the risk of injuries in the lab and to prevent from its occurrence. Improved reporting strategies are needed to increase safety for laboratory technicians.

Key words: unintentional injuries, reporting, Laboratories, Yemen
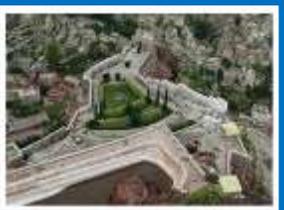
Risk Factors of Hepatocellular Carcinoma Among Yemeni Patients Attending National Oncology Center In 2013

Abdulwahab Al-Nehmi

BACKGROUND

Hepatocellular carcinoma (HCC) is the fourth most common cancer worldwide and is the third cause of cancer-related deaths. At the National Oncology Center (NOC) of Yemen HCC ranked the fourth most common cancer accounting for 5% of all cancer cases. The major known risk factors for HCC are viral hepatitis B and C, toxic hepatitis due to aflatoxin, alcohol, and nonalcoholic fatty liver disease. Studies addressing the role of potential risk factors for HCC were rarely examined in Yemen. The aim of this study was to test the association between possible risk factors and HCC among Yemeni patients.

METHODS

A hospital-based case-control study was conducted between December 2013 and January 2014. Cases and controls were matched by age group, gender and residence. Cases were diagnosed by ultrasound (US) or Computed Tomography (CT) and confirmed either by pathology or elevated level of serum alpha Feta Protein (AFP). The risk factors were collected through personal interviews. We collected the following risk factors; Diabetes, Smoking, Khat chewing and Shama chewing. Blood samples were tested for hepatitis B surface antigen (HBV) and hepatitis C virus (HCV) and AFP. SPSS version 14 was used for the data analysis.

RESULTS

A total of 27 HCC cases and 2 matched controls were enrolled in the study. The enrollment of the study participants is still underway. The median age of the participants was 60 ± 11.6 (ranged 35-87 years), and were predominantly males (90%). Liver cancer was confirmed by pathology in 59% of the cases and the rest by CT and AFP (41%). The median AFP level for the cases was 339ng/ml. We examined the association between HCC and several risk factors: Diabetes, HCV, HBV, Smoking, Khat chewing and Shama. All of the tested risk factors were not significantly associated with HCC ($P>0.05$).

CONCLUSION

In this preliminary analysis, we did not find any significant association between HCC and the risk factors. This could be due to limited number of controls so far recruited.

Key words: Hepatocellular carcinoma, hospital-based, case-control, Yemen

b. Oral Presentations

Evaluation of Malaria surveillance system in Al Dhale governorate Yemen, March 2011

Mohamed .A. Abdullah, Abdullah N, Saleh A, Al Kohlani A, Jumman A

FIRST NATIONAL YEMEN FIELD EPIDEMIOLOGY TRAINING PROGRAM CONFERENCE

Sana a – Yemen 26 - 27 February 2014

BACKGROUND

Yemen ranks fifth in the burden of malaria in The East Mediterranean Region, about 60% of population (14millions) is at risk and the annual number of cases is estimated to be 265,074 with 779 related deaths. Al Dhale governorate is a hypoendemic malaria area. However, weak information health systems with multiple sources of data contribute to conflicting statistics regarding the real burden of malaria. Therefore an integrated malaria surveillance system was established in 2010. We conducted the first evaluation of the system in Al Dhale.

METHODS

We examined qualitative and quantitative data through review of written documents: case records, surveillance reports, and available data in Al Dhale health office from March to April, 2011, using CDC's updated Guidelines for Public Health Surveillance System Evaluation. Stakeholders were also interviewed. Suspected malaria cases with fever, chills and sweating are reported and confirmed if microscopic or rapid test is positive.

RESULTS

The malaria surveillance system is simple, acceptable, and flexible. Reporting facilities increased from 15 to 68 covering 40% of the population. A total of 36,099 suspected malaria cases were reported in 2010. However, only 233 were lab-confirmed. The sensitivity was 82% 233/ 272 expected cases), while the Predictive Value Positive (PVP) was 1%. Duplicate records are not checked.   Monthly reporting does not allow for rapid response.

CONCLUSION

The very poor PPV compared to a relatively high sensitivity is most likely attributed to both the hypoendemicity of malaria and using a broad suspect case definition. A tighter clinical case definition would improve PVP and weekly reporting will improve timeliness. Expanding surveillance area, intensive training and continuous supportive supervision are important to cover population, sustain the system and improve data quality.

Key words: Malaria, surveillance evaluation, Al Dhale, Yemen

Evaluation of Bio-security level in Parent Poultry farms in Yemen, 2010

Yaser Aleryani, Hezam Mutahr, Alqadasi, Tylar, Quhtan A.Jumaan

Presented in the 7th TEPHNET, November 10-15, 2012 in Amman, Jordan

BACKGROUND

Parent poultry farms in Yemen are very common with a total population of about 1.5 million birds. Recent disease outbreaks of Avian Flu (H5N1) including in the Middle East demonstrate the risk imposed by these farms to local communities. Bio-security index determines the level of risk of spreading infection based on several factors such as, live birds marketing , migratory and wild birds. This study measures the bio-security level in parent poultry farms in 2010.

METHODS

We randomly selected 37 of 80 parent farms from 17 districts in 9 governorates; 6 teams conducted interviews using a standard questioner designed by FAO and WHO. The Questioner had 50 factors to assess level of bio-security risk. The summation of weights values of all factors for every farm was used to compose the general risk index. Data was entered into Excel then imported to the ArcGIS Desktop 9.3. The scores were classified in 4 intervals from highest to lowest risk level (0-25, 26-50, 51-75, and 76-100).

RESULTS

Our results indicate that the bio-security levels of parent poultry farms were 11% at high- risk, 86% at intermediate-risk, and 3% at low-risk. The following factors posed the highest to lowest risk level: position of farms from the source of contamination with a score of 30.4, waste disposal management with 31.2, fodder and water with 52.7, disinfection with 72.7, protection and preventive measures with 79.6, management with 94.

CONCLUSION

Most parent poultry farms in Yemen are at high or intermediate bio-security risk. The most risk level was posed by position of farms and waste disposal management. Therefore, policy to regulate parent poultry farms is needed, especially as it relates to locations and waste management.

Key words: Parent farms, poultry, bio-security risk, survey, Yemen

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Dengue or Chikungynya Fever Outbreak?

Ali .A. Jaawal , A. Alwagedi, A Bin Break, R.Buathong, A.Jumman

Presented at First Arab World Public Health Conference

4 - 6 April 2013, Dubai- UAE

BACKGROUND

Since 2002, dengue has caused multiple outbreaks in Yemen. In October 2010-January 2011, a large outbreak suspected to be dengue was reported in Hodeidah; however, PCR analysis confirmed this to be the first chikungunya fever outbreak in Yemen. In April 2012, Hodeidah reported a suspected dengue outbreak. We investigated the outbreak to confirm its etiology.

METHODS

We used WHO case definitions for dengue and chikungunya fevers and investigation forms to collect data on suspected cases. Blood specimens from 179 cases were tested using IgM ELISA; 12 specimens were tested using rt-PCR in Thailand. Data were analyzed using EPI-INFO.

RESULTS

During January–June 2012, 1148 suspected cases were reported; 1057(92%) met the dengue case definition, and 854(74.4%) met the chikungunya case definition; 85(7.4%) had hemorrhagic manifestations. Male to female ratio was 1.6:1 and was statistically significant (P-value < 0.005). Overall incidence rate was 41.9/100,000, and was 66.4/100,000 among those aged 22-29 years. All cases reported fever. Dengue cases reported less joint pain (96.4%), than chikungunya cases (100%); headache (93.6% and 92%) and myalgia (93% and 92%) were similar for dengue and chikungunya cases, respectively. Fifty-five (47%) specimens tested dengue IgM positive; and 15 (21%) chikungunya IgM positive; six cases were rt-PCR positive for 3 dengue virus serotypes (1,2,3) and one case was rt-PCR positive for chikungunya.

CONCLUSION

This is the first investigation to confirm a dengue outbreak caused by multiple serotypes in addition to chikungunya. The presence of 3 serotypes indicates that future outbreaks are likely to be severe; therefore efforts to prevent dengue need to be strengthened including early outbreaks detection and response; increased community awareness to eliminate breeding sites and filtering water through cloths to eliminate larva.

Key words: Dengue, outbreak, chikungunya, multiple serotype, Hodeidah, Yemen.

Epidemiology of rabies in Sana'a city, 2011

Fuad Shamsan, Aisha Jumaan

BACKGROUND

Rabies is a fatal zoonotic disease of humans and all other warm blooded animals with about 55,000 annual deaths worldwide. In Yemen, 36 deaths were reported in 2011.The aim is to describe the epidemiology of rabies and assess to the proper administration of post-exposure prophylaxis (PEP).

METHODS

Data collected on human rabies from log books of Rabies National Centre. Of 1801 cases reported in 2011, we selected every fourth case listed for entry into a database resulting in 394 cases. We excluded 56 cases with missing data.

RESULTS

Children aged 5-14 years were most affected(52.03%) and 75% were males. Case fatality is 3.1%. Bites distributions were in the lower limb (40%), upper limb (34%), and head and neck(12%). 10 % did not receive PEP treatment and 42%receivedonly one dose. Of those who died, bites in the head and neck were more common odds ratio (OR) =5.49, P-value< 0.01). Deaths were also higher among those who seek medical care late (OR=14.86, P-Value <0.01); and 5deaths received PEP 30 days after exposure.

CONCLUSION

Young male children are at higher risk because they have more access to outdoor activities. Bites in the head and neck associated with poor outcome. All deaths could have been prevented with early treatment and adequate PEP administration. An awareness camping that should concentrate on avoid stray dogs/animals and the importance of early treatment and completing all PEP doses is a priority especially among school children.

Key words: Rabies, Sana'a. post-exposure prophylaxis, bites, deaths

FIRST NATIONAL YEMEN FIELD EPIDEMIOLOGY TRAINING PROGRAM CONFERENCE Sana'a – Yemen 26 - 27 February 2014

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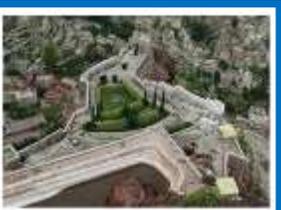
Post-marketing surveillance for intussusception following rotavirus vaccine administration, Yemen 2013

Fuad M Shamsan, AW Al Serouri, FA Othman, A AL Sharabi ,M Althawabi

Presented at EMPHNET's Third Regional Conference held in Marrakesh, Morocco,

December 4 – 7, 2013

BACKGROUND

Rotavirus infection is a leading cause of diarrheal illness in infants and young children in Yemen with an estimated 4116annual deaths. Rotavirus vaccine was introduced in Yemen in August 2012. However, unexpected increase in intussusception cases occurring after rotavirus vaccine has been reported from developed countries. To assess such rare adverse events, Adverse Events Following Immunization Program (AEFIP) launched for post rotavirus vaccine intussusception. The aim is to describe AEFIP intussusception reported cases among rotavirus vaccine recipients.

METHODS

Active hospital-based surveillance reports identified intussusception cases from October 2012 to Jun 2013 from three sentinel sites were analyzed. Intussusception cases were identified by pediatrics surgeons and confirmed by radiology or surgery together with medical record documentation.

RESULTS

Twenty five cases of intussusception were reported during the surveillance period. All cases under 2 years with a male to female ratio of 64:36%. Although 9 cases received other vaccines, they did not receive rotavirus vaccine due to age restriction. Two cases did not receive any vaccine. Out of the remaining 14 cases (56%) who are rotavirus vaccinated, 5 (36%) developed intussusception within one to 19 days (mean 8 days).

CONCLUSION

The fact that more than one third of rotavirus vaccinated children developed intussusception within 19 days of vaccination is alarming. Therefore, strengthening AEFIP is needed for better understanding of the size of the problem and underlying risk factors. In developing countries such Yemen, small risk increased of intussusception may be outweighed by rotavirus vaccination benefits in reducing high diarrheal morbidity and mortality.

Key words: Rotavirus vaccine, Intussusception, adverse event, Yemen

Evaluation of acute flaccid paralysis surveillance system in Ibb Governorate, Yemen, 2013

Nabiha A Alabhar, AW Al Serouri, A.M. Bin break, K Al Mohamadi, A. Alseragy

Presented at EMPHNET's Third Regional Conference held in Marrakesh, Morocco,

December 4 – 7, 2013

BACKGROUND

Acute Flaccid Paralysis (AFP) surveillance was adopted by WHO in 1988 to monitor progress towards poliomyelitis eradication and was launched in Yemen in 1998. The last polio case from Yemen was reported in February 2006 from Ibb governorate. This evaluation is a part of the national response to recent polio outbreak in neighboring Somalia and aims to evaluates performance and identifies components require strengthening.

METHODS

The 2011 and 2012 AFP database were analyzed. A sample of 9 out of 71 health facilities under surveillance were assessed according to predesigned format for data consistency. All responsible personnel for AFP surveillance were interviewed and relevant records examined. The performance evaluated using WHO-specified AFP surveillance indicators.

RESULTS

Eighty-seven percent of facilities are sending weekly zero reports compare to ≥90% target. 32 and 37 AFP cases were reported during 2011 and 2012 with a case detection rate of 2.8 and 3 per 100 000 population aged less than 15 years respectively compared > 2 target. Percentage of AFP cases with two adequate stool specimens is 94% and 95% respectively compared to ≥80% target. The percentage of cases notified within seven days from onset of paralysis was 75% and 81% respectively compared to ≥ 80% target.

CONCLUSION

Ibb AFP surveillance demonstrates a good achievement of surveillance targets except for the zero reporting. Efforts need to be maintained in next years to strengthen AFP surveillance for polio eradication. Different and more interactive approach must be considered to educate health workers on the importance of weekly zero reporting.

Key words: acute flaccid paralysis surveillance,Yemen,evaluation, poliomyelitis
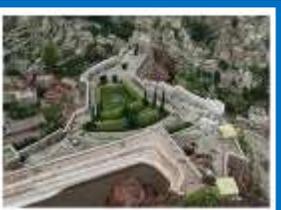
Chickunguanya Outbreak in Al-Hawtah District, Lahj Governorate,Yemen, 2012

Maha A. Obadi, M. Saleh, N. Abdulaziz, AW Al Serouri

Presented at EMPHNET's Third Regional Conference held in Marrakesh, Morocco,

December 4 – 7, 2013

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BACKGROUND

Chikungunya (CHIK) outbreak was first confirmed in Yemen in 2010. In April 2012, FETP residents requested to investigate an outbreak of unexplained fever with severe arthritis in Al-Hawtah district, Lahj governorate.

METHODS

CDC CHIK case definition was used. Data was collected on standardized investigation form covering demographic, clinical and epidemiological aspects through an active household search and entomological survey. Blood samples were collected at the beginning for confirming CHKI outbreak using IgM ELISA.

RESULTS

Two hundred thirty four illnesses met the case definition. Mean age was 31 years with no gender difference. The index case was a 14 years old boy affected on 21 March with no history of travel or having visitors from endemic area. All cases reported fever and headache, 95% arthralgia, and 64% joint swelling. The highest incidence rate of 10/1000 was among active age group of 25-29 years. 108 cases (46%) concentrated in the fish market area; attack rate=78/1000. Aedes aegypti house index of 50% and container index of 28% were highest in the fish market. Blood samples found to be positive for CHIK IgM.

CONCLUSION

This is the first CHIK confirmed outbreak in Lahej and the fourth in Yemen since 2010. This highlights the need for improving surveillance system for timely detection and prompt response. Health education and indoor fogging were implemented and controlled the outbreak. Providing training to health personnel on early detection, reporting, and proper case management together with boosting community awareness and engaging communities in preventive efforts are recommended.

Key words: Chickungunya, outbreak, Yemen, FETP, surveillance.

Bacterial Meningitis Epidemiological Situation, Yemen, 2010-2013

Maha A. Obadi, M. Gahaf , AW Al Serouri

Presented at EMPHNET's Third Regional Conference held in Marrakesh, Morocco,

December 4 – 7, 2013

BACKGROUND

Bacterial meningitis remains an important cause of mortality and morbidity with high rates of long-term neurological sequelae in Yemen. The aim is to describe the epidemiology of bacterial meningitis in Yemen during Jan 2010- May 2013.

METHODS

Laboratory-based sentinel surveillance established in 2008 at 9 referral sentinel facilities. Doctors and laboratories' technician trained on surveillance METHODSs according to WHO standard case definition.

RESULTS

Between 1/1/ 2010- 31/5/ 2013, 3538 cases reported with 1979 (56%) met case definition. Male to female ratio 1.6:1 and mostly affected age groups were < 1 year (37%) and 1-4 years (30%) with case fatality rate of 34/1000. Most common presentations: fever (100%), seizures (87%), vomiting (35%), altered mental status (34%), neck stiffness (22%), and coma (13%). 1112 cases (56%) received antibiotics before arrival to sentinel site. CSF culture done in 1569 (79%) and 104 (6.6%) shows bacteriological CSF i.e. turbid, decrease glucose <40mg.dl, increase protein >100 mg. dl and leucocytes neutrophils >10 cells mm3. Among bacteriological CSF cases, 54 (52%) were pathogen isolated: S. pneumonia (50%), S. aureus (28%), N. meningitides (9%), H. influenza (7%) and others (6%). The CSF culture positivity was lower among those who had antibiotics before Lumbar puncture (LP) compared to those who did not: 20/1000 vs. 30/1000. Similarly, case fatality rate higher among those who had antibiotics before LP: 185/1000 vs. 111/1000.

CONCLUSION

Data provided through sentinel surveillance offer much needed background epidemiological information on which to base further work to identify areas where improvements in surveillance, therapy or prevention are most needed.

Key words: Meningitis, Epidemiology, Sentinel Surveillance, Yemen

An outbreak of acute gastroenteritis associated with bottled water in internally displaced persons, Yemen, 2013

Mohamed A. Qasem, M Kolase, AW Al Serouri, A Jumaan

Presented at EMPHNET's Third Regional Conference held in Marrakesh, Morocco,

December 4 – 7, 2013

BACKGROUND

Internally Displaced persons (IDPs) experience severe health consequences mediated by displacement. This investigation was undertaken in response to an outbreak of diarrhea among IDPs living in temporary governmental building to confirm the outbreak and identify etiology, source and mode of transmission.

METHODS

A retrospective cohort study was conducted to identify food items and circumstances responsible. Stool samples were collected for analysis. A case was defined as an IDP who developed diarrhea or vomiting with or without abdominal pain after eating on 23rd March 2012.

RESULTS

All residents (87) were interviewed. Symptoms started among residents after consuming biscuits, dates and commercial chilly mineral water packaged in 750 plastic bottles distributed by a charity. Forty-four (50%) had developed gastroenteritis, most commonly manifested by abdominal colic (100%), diarrhea (93%), fever (43%), and vomiting (11%). The mean incubation period was 23 hours and the epidemic curve suggested common point source outbreak.66% of persons who drank bottled water has gastroenteritis compared to 27% of who did not (RR 5; 95% CI 2-13). A visitor who only drank the bottled water also developed gastroenteritis. Although unopened bottled water was not available for laboratory confirmation, stool cultures indicated that Escherichia coli could be the causative organism.

CONCLUSION

This outbreak was most likely caused by drinking contaminated commercial bottled water and similar outbreaks reported from China and Europe. As bottled water industry is expanding in Yemen and bottled water becomes popular for its reasonable price and can be drunk directly, long-term quality control and surveillance of bottled water is recommended.

Key words: Gastroenteritis, Outbreak, IDPs, e-coli, bottled water, Yemen

Measles outbreak with high fatality at Qufl Shamr district, Hajja governorate, Yemen, 2012

Mohammad A. Alnajjar, A. Al Kohlani, A. bin Break, A. Jumaan, A. Al Serouri

Presented at EMPHNET's Third Regional Conference held in Marrakesh, Morocco,

December 4 – 7, 2013

BACKGROUND

Measles is a highly infectious vaccine-preventable disease and leading cause of death among children. Prior to 2011, measles was at elimination phase in Yemen however, as vaccination coverage dropped to 71% due to political unrest several outbreaks reported. In May 2012, Qufl Shamr district reported sudden increase of cases of fever and rash. We investigated the outbreak to confirm diagnosis and recommend prevention and control.

METHODS

We used WHO measles case definition. We identified cases through active household search from May 4[th]to 28[th]where cases/guardians interviewed using standard form. Serum specimens were tested using measles IgM ELISA.

RESULTS

Sixty cases fulfill the case definition with mean age of 6 and male to female ratio of1:2.Common symptoms were fever (100%), rash (68%), difficulty breathing (32%) and diarrhea (30%). Hemorrhagic manifestation and mouth ulcers present in 20%.Measles IgM was positive in 12 cases. Vaccine coverage among confirmed cases was 5% compared to 46% among non-confirmed (P-value =0.0006). Seven deaths (71%) reported among under-five children with case fatality of 12%. All deaths were from Alholog village and unvaccinated. Out of seven deaths, four were epidemiologically linked to confirmed cases.

CONCLUSION

This is the first measles outbreak in Yemen with high fatality rate. All deaths were unvaccinated and most confirmed cases from area where no vaccination services or vitamin A are provided. There is an urgent need to increase vaccination coverage to prevent more cases/deaths. Sensitive and timely surveillance is essential to ensure quick outbreaks identification and response.

Key words: measles; deaths, outbreak, Gofl Shamr, Hajja
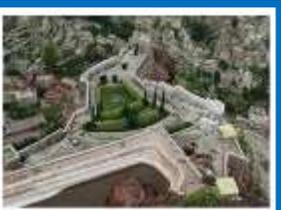
c. Poster Presentations

The tip of the iceberg: cholera outbreaks in Al-dhale, 2011

Mohamed A. Abdullah, Methaq Alsada, Y. Abdelwareth, Al Kohlani , A.Jumman

Presented at First Arab World Public Health Conference

4 - 6 April 2013, Dubai- UAE

BACKGROUND

Yemen civil unrest since January 2011 has led to deteriorating health conditions. During July-August, cases of watery diarrhea and vomiting were reported to local health care facilities in multiple regions of the country including Al-dhale Governorate. We investigated these cases to determine the etiology of the outbreak.

METHODS

We used routine surveillance data in Aldhalae Governorate to compile the cases reported by health centers. Suspected cholera cases were defined as acute watery diarrhea with or without vomiting during the outbreak. A team from the Ministry of health and the local health departments initiated an investigation of reported cases. A case investigation form was used to collect clinical, demographic and potential sources of exposures information. Five stool samples were collected and sent to the central laboratory in Sana'a for testing using ELISA

RESULTS

A total of 3,172 suspected cholera cases were reported. Children less than 10 years old were more affected (45%). The outbreak started in Qataba district and spread to adjacent districts. Sanah, a central fruits and vegetables market place was the most affected and has 42% of cases. A total of 41 persons died, which gives a fatality rate of 1.3%. The mortality was higher among children less than 10 years old (49%).Three samples out of five tested positive to v.cholera

CONCLUSION

This is the largest cholera outbreak reported in recent years in Dhale. Our results call for strengthening surveillance and control measures including early detection and response, Continues community health education and water *chlorination* for sanitation. It is important for donors and public health officials in Yemen to have plans for dealing with the consequences of the conflict situation

Key words: Cholera outbreak, Al-dhale health office, MOPH&P Yemen

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Traumatic Injection Neuropathy (TIN), Yemen, 1998-2012

Ali .A. Jaawal , Khaled.Khder, Ali. Bin Break, Slma. Afefy, A.Jumman
Presented at First Arab World Public Health Conference
4 - 6 April 2013, Dubai- UAE

BACKGROUND

Traumatic injection neuropathy (TIN) is an injury to a nerve –mostly sciatic or radial - caused by un-necessary injection and leading to acute flaccid paralysis of the associated limb. Un-necessary injections are estimated to be as high as 75% of the 12 billion injections given globally each year.. Intramuscular injections are common practice in the health care and community setting in Yemen. This study aims at identifying the incidence of TIN in Yemen from1998- 2012 and to describe the epidemiology of the disease.

METHODS

Data of the acute flaccid paralysis surveillance system (AFP) for Yemen1998-2012 was used to identify cases of TIN. Records at the surveillance central level was reviewed. Available data included: age, sex, governorate of residence, clinical picture, differential diagnosis and final laboratory confirmation. TIN cases were identified by physicians using WHO case definition of TIN. In case of unavailable records, diagnosis was made by a panel of experts including at least one paediatrician and one neurologist. Data analysis performed using Ms-excel and EPI-INFO.

RESULTS

From January 1998 to June 2012 a total of 4294 cases of AFP were reported in Yemen. Among them, 759 (17.7%) were TIN, their mean age was 3.7±3.2, and 67% were males. The disease was significantly higher in males ($p<0.001$) than in females. Overall the incidence of TIN was 5.5/1000.000 child < 15 years old in 2012.Rate increases over years; it increased 11 times 1998 to 2012).Rate differs by governorate, it was highest in Almahra(17.3), Alhodeidah(12.9) and Mareb (10.8) per 100.000 population.

CONCLUSION

High rate of TIN was identified in Yemen, and is causing a significant health problem **in** Yemen. Raining awareness on the community level and training of health care workers to avoid un-necessary injections is crucial to prevent TIN in Yemen.

Key words: Traumatic Injection Neuropathy, Yemen, unnecessary injections

Dengue Outbreak in a Refugee Camp in HaradhCity at the Border with Saudi Arabia,2012

Ahmed H. Al-Shahethi, M. Al-Najar, A. Bin Break, A. Jumaan

Presented at First Arab World Public Health Conference

4 - 6 April 2013, Dubai- UAE

BACKGROUND

Dengue is viral disease that has emerged as a public health problem in Yemen. Dengue was confirmed in Yemen in 2002 and has spread to over 10coastal governorates. Harad hcity borders Saudi-Arabia (SA) and houses a camp for immigrants who come from the Horn of Africa to seek employment in SA. In May 2012,HaradhDistrict reported a dengue outbreak for the first time involving the immigrants' camp. We conducted an investigation to characterize the outbreak and confirm the diagnosis.

METHODS

We used WHO dengue case definition and form to collect clinical and demographic data from April 1-May 25th2012. We also reviewed surveillance records for dengue cases starting January, 2012.Blood specimens were collected from 120 cases and tested using IgM ELISA, Rapid test and rt-PCR. Data were entered and analyzed using Epi info.

RESULTS

From January-March, 2012, 45 suspected dengue cases were reported among Ethiopian immigrants; the first two local cases occurred on March 15th.   Between April 1 to May 28th 2012, 220 cases were reported,208 met the case definition; after May until 10th Sep. 2012 were reported 7suspected dengue cases. 130 (62.5%) were immigrants. Of these, 106 were hospitalized; 38 had hemorrhagic manifestations and three died. Most cases, 167(80.3%) were aged 15-29 years; 184 (88.5%) were males. Fifty-one specimens tested dengue positives. Positive cases reported more muscle and retro-orbital pain, hemorrhagic manifestation and vomiting compared to negative cases(P-value <0.03) and were younger, median age18years (p-value<0.03.One case was rt-PCR serotype-1 positive; and the genotype was similar to that isolated from Djibouti in 1998 and Saudi Arabia in 2006.

CONCLUSION

Outbreak was due to dengue sero-type-1. The presentation of dengue hemorrhagic fever is compatible with secondary infection. The high burden of disease among males and immigrants suggests outdoor infection. Sentinel surveillance is needed along border towns for early detection and response to outbreaks.

Key words: refugees, dengue, Haradh, Yemen, viral diseases
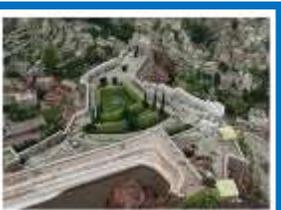
Dengue Outbreak in Gail Bawazeer District, Hadramout Governorate, Yemen, 2012

F.Daraan, A. Alwaqedi, A. Alhaddar, A. Binbreak, A. Jumaan

Presented at First Arab World Public Health Conference

4 - 6 April 2013, Dubai- UAE

BACKGROUND

Dengue fever (DF) has caused multiple outbreaks in recent years in Yemen. Hadramout Governorate especially Gail Bawazeer district had several outbreaks since 2005 due to the adequate water source (the meaning of Ghail). In July 2012, an outbreak characterized by fever was reported from Gail Bawazeer district. We conducted an investigation for the first time to characterize the outbreak and confirm the diagnosis.

METHODS

We reviewed reports of fever and hemorrhagic fever in the surveillance system, laboratories and hospitals from May- July 2012 using WHO case definition. We interviewed 7 cases collecting clinical and demographic data. 59 blood specimens were collected and tested using IgM ELISA.

RESULTS

Of a total 203 cases reviewed , 98% met the case definition, 2% were DHF, 56% was male with 1% case fatality. Most affected age groups were 10-19 years (38%). 69% of cases was from Gail Bawazeer city with 32/10000 incidence. Of 59 specimens tested, 64% were ELISA positive for DF with no gender differences.

CONCLUSION

The investigation confirmed a dengue outbreak in Gail Bawazeer district. The high burden of disease is among males, and young adults suggests outdoor infection. As most cases reported from Gail Bawazeer city, efforts to contain dengue to prevent their spread to other part of district.

Key words: Dengue, outbreak, Hadramout, Yemen
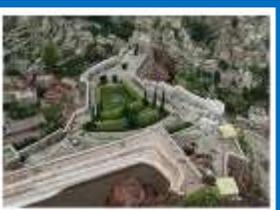
The hazard of conflict: cholera outbreak in Abyan Yemen 2011

Mohamed A. Qasem, N. Al-Abhar, A. Jumaan

Presented at First Arab World Public Health Conference

4 - 6 April 2013, Dubai- UAE

BACKGROUND

Diarrhea is a major public health problem in Yemen, with increasing incidence rates (IR): in 2008 IR was 0.8, in 2009 IR was 0.9, and in 2010 IR was 1.1. In 2011, several diarrhea outbreaks were reported from multiple governorates. On April , 2011 surveillance system detected an increase in diarrheal cases in Abyen governorate during an armed conflict. The aim is to describe this outbreak and to identify the etiology and recommend control measures.

METHODS

We used a WHO standardized form for diarrhea outbreak investigation. Suspected cases with a cute watery diarrhea with or without vomiting defined as cholera. Nine stool samples and water samples from four sources were collected and sent for laboratory testing.

RESULTS

A total of 343 suspected cases occurred between 27th April and 23nd May 2011. The median age was 20 years (1- 95 years). Age group less than five years more affected (25%), No gender differences found, 60 cases were admitted to a hospital complaining of severe dehydration or renal failure, and 5 cases died. Attack rate was 2. 44/1000 and fatality rate was 1.169%.laboratory results for wells and stool were positive for vibreo chlera 01 serotyp. Index case was male- 14 year old in Jaar city. More cases occurred after recorded drinking from a mosque well, as a result chlorination of wells was delay because the ministry of water start chlorination the wells that belong to ministry and ignore the mosque well because it private well. However we were not able to close the well because there are no other source for drinking water so it was the source of spreading outbreak. Intervention included case management, distribute chore table to contact and health education.

CONCLUSION

It is known that unsafe water supply, poverty and overcrowding are major risk factors for acute diarrheal outbreak aggravated by political crises. Our findings call for multi-sectorial coordination of key stakeholders, and a national plan to deal with emergency and response. From the start of the outbreak on 27 of April till November the outbreak spread to all Abyan governorate and part of Aden governorate.

Key words: diarrhea, cholera, Yemen

Unintentional Injuries: Magnitude And Feasibility Of Collecting Data. Yemeni Hospital

Nabiha Al-Abhar, M.A.Qassem , Aishao. Jumaan , Lisa Bryde

Presented at First Arab World Public Health Conference

4 - 6 April 2013, Dubai- UAE

BACKGROUND

Unintentional injuries are a major public health problem, increasing in most developing countries, including Yemen. A large proportion of injuries are caused by road traffic accidents. In 2010,18,407 traffic accidents injuries were reported in Yemen,87.7% involved men, causing 2,735 deaths, 87.2% were men.The burden and pattern of injuries in Yemen are poorly known; therefore, we assessed the feasibility of collecting unintentional injury data to better understand its epidemiology and help plan prevention programs.

METHODS

We collected unintentional injuries data using the WHO case definition and a modified WHO questionnaire. From April-July, 2012,trained volunteers collected data from individuals who met the case definition and presented at/or admitted to Al-Thawra hospital. Epi info was used for analysis.

RESULTS

A total 887unintentional injuries were collected,248cases (27.96%) ages 20-29 years with mean age 25.7.The Male: Female ratio was 5:1.1.The most common cause of unintentional injuries was traffic accidents with374 (42.1%); odds ratio for traffic accidents in age group20-29 compared to all age groups1.55 CI (1.1-2.1) p value< 0.0024.Injuries due to falling down,55.9%, resulting in fracture and joint dislocation, 26.9 %,(23.7% male, 40% female),cuts and open wounds,26.3 %, (27.6% male, 21.1% female).Most injuries,42.1%,occurred outside home and 33.3% at home. Most injured were students,35.4%.Most deaths, 90.0%,occurred due to traffic accidents with odds ratio of20.5 compared to other causes of death CI (2.6-161) P value < 0.00006.

CONCLUSION

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Surveillance for unintentional injuries is feasible in major hospitals. Young adult males are at high risk for road traffic accidents and students are at high risk for falls .We recommend instituting hospital based surveillance using a standardized instrument to generate data to provide planners and policy makers with information needed for prevention and control measures.

Key words: unintentional injuries-feasibility- data collection- Yemen
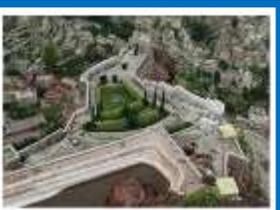
Incidence of Rubella IgM Antibody in Yemen from 2008 to 2011
Yaser Aleryani, Nahed , K. Shibani , B. Sharon, A. Jumman

Presented at First Arab World Public Health Conference

4 - 6 April 2013, Dubai- UAE

BACKGROUND

In most developing countries, rubella vaccine has not been included in the Expanded Programme on Immunization (EPI). From 1996 to 2009, the number of rubella cases reported decreased from 670,894 in 2000 to 121,344 in 2009 due to vaccination. 112 000 cases of congenital rubella syndrome (CRS) occur each year . The aim of this study is to determine the incidence of Rubella virus in Yemen and show the burden of disease to encourage a policy decision to introduce Rubella vaccine.

METHODS

A descriptive epidemiology study of collected data between January 2008 and December 2011 among patients with fever and rash was conducted. Demographic data were collected from the records of National Central of Public Health Laboratory (NCPHL). Samples were collected by the Surveillance Officers as a part of Measles investigations and sent to NCPHL according to WHO standards. Suspected cases of Measles were tested by Rubella specific IgM kit.

RESULTS

Of 3621 samples, 1002 (27.08%) were rubella IgM positive. The incidence rate was 0.86 in 2008, 1.02 in 2009, 0.84 in 2010 and 1.66 in 2011 per 100,000. The incidence is highest in late winter and early spring. Rubella antibodies IgM were detected in 56 of 158 (36%) of females of childbearing age (15 - 49 years). The most affected governorates were Say'on with 102 /100,000, followed by Aden with 31 /100,000. The most affected age group was (5 to 15) with 42%.

CONCLUSION

An increasing trend of rubella incidence was noted that might be attributed to the improvement of the reporting system and availability of rubella reagents. The majority of patients were from the southern governorates which could be attributed to the active reporting. The most affected group was from 5 to 15 years of age, and that women of the reproductive age group were at risk. Rubella immunization of these groups with educational campaigns are advised.

Key words: rubella, incidence, immunization

Chickunguanya Outbreak in Al-Hawtah District, Lahj Governorate,Yemen, 2012

Maha A. Obadi, M. Saleh, N. Abdulaziz, Abdulwahed Al Serouri

BACKGROUND

Chikungunya (CHIK) is a mosquito-borne viral disease characterized by an abrupt onset of fever frequently accompanied by joint pain. An outbreak of Chikungunya was first confirmed in Yemen in 2010. In April 2012, FETP residents requested to investigate an outbreak of fever with severe arthritis in Al-Hawtah district, Lahj governorate, it was not known in other governorates.

METHODS

CDC CHIK case definition was used for surveillance :an acute onset of fever >38.5°C and severe arthralgia/arthritis not explained by other medical conditions, within the period from 21 March- 8 May 2012 in Al-Hawtah district. It is a capital of Lahej governorate with population of 31129. Data was collected on standardized investigation form covering demographic, clinical and epidemiological aspects using active household search with entomological surveys. Blood samples were collected for confirming outbreak using IgM ELISA.

RESULTS

Two hundred thirty four suspected cases met the case definition by active surveillance. The mean age was 31 years with no significant gender difference. The index case was a 14 years old boy affected on 21 March with no history of travel or having visitors from endemic area. All cases reported fever and headache, 95% reported arthralgia and 64% joint swelling. The highest incidence rate of 10/1000 (34/2344) was among persons aged 25-29 years. Around half of cases concentrated in the fish market area with attack rate 78/1000 (108/1377), supporting the hypotheses that infection was imported by fishermen coming from Al-Hudieda governorate where the first CHIK outbreak reported. Entomological results showed high vector indices in fish market area: house index 50%, and container 28%. Samples collected for outbreak lab confirmation found to be positive for CHIK IgM. Health education, and indoor fogging were done together with improving case management and reporting.

CONCLUSION

This is the first CHIK confirmed outbreak in Lahej and the fourth in Yemen since 2010 that highlight the need for improving surveillance system for timely detection and prompt response. Health education and indoor fogging were implemented and successfully control the outbreak. Providing training to health personnel on early detection, reporting and proper case management together with rising community awareness and engaging in preventive efforts.

Key words: chickungunya, outbreak, Yemen, FETP, surveillance.

Evaluation of acute flaccid paralysis surveillance system in the Costal Hadramaut Governorate, Yemen, 2013

Mohammed A A Saleh, AW Al Serouri, Ali M.Bin Break

Presented at EMPHNET's Third Regional Conference held in Marrakesh, Morocco,

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BACKGROUND

Yemen has been polio free since 2006. However, Yemen in general and Hadramaut remains at high risk for Wild poliomyelitis virus (WPV) importation and sustained transmission due to civil unrest, insecurity, and population movements into and through Yemen from the Horn of Africa. During the last 2005 epidemic of poliomyelitis in Yemen, seven cases reported from Hadramaut. Highly sensitive surveillance for acute flaccid paralysis (AFP) is critical for polio eradication. This evaluation is a part of the national response to the recent polio outbreak in neighbouring Somalia and aims to evaluates performance and identifies components require strengthening.

METHODS

Hadramaut 2010-2012 AFP databases were analyzed. Sample of 6 out of 18 health facilities under active surveillance were assessed according to predesigned format. All responsible personnel for AFP surveillance were interviewed and relevant records examined. The performance evaluated using WHO-specified AFP surveillance indicators.

RESULTS

Ninety-four percent of facilities are sending weekly zero reports compare to ≥90% target. Non Polio AFP Rate per 100,000 for population aged less than 15 years in 2010, 2011, 2012 was 3.6, 4.2 and 3.6 respectively compared to > 2 target. Percentage of AFP cases with two adequate stool specimens was 83%, 86%, and 93% respectively compared to ≥80% target. The percentage of cases notified within seven days from onset of paralysis was 100%, 86%, and 93% respectively compared to ≥ 80% target.

CONCLUSION

Costal Hadramaut AFP surveillance demonstrates a good achievement of surveillance targets. Efforts need to be sustained to strengthen AFP surveillance to reach the goal of polio eradication.

Key words: acute flaccid paralysis surveillance, evaluation, Al-Mukallaa ,Yemen

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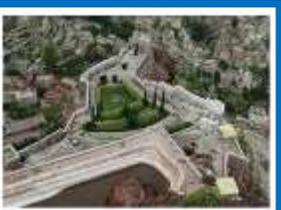
Mixed outbreak of Dengue and West Nile virus, Yemen, 2013

M. Qasem, Ali Jaawal, , A Bin Break, A. Basalh1, AW Al Serouri

BACKGROUND

In March 2013, a dengue-like outbreak was reported from Hadramout where dengue outbreaks are reported since 2003 but for the first time associated with neurological manifestations suspecting West Nile Virus (WNV). FETP residents investigated the outbreak to confirm etiology and make recommendations to control and prevent similar outbreaks in the future.

METHODS

WHO case definitions for dengue and WNV were used. Data was collected from the suspected cases on a predesigned form. Forty-two blood specimens were collected and tested for ELISA dengue IgM and WNV IgM.

RESULTS

During 8 March to 6 July 2013, 362 suspected cases identified with male to female ratio of 2:1 and overall incidence rate of 3/1000 that is highest (6.4/1000) among 10-19 years age group. 352 (97%) of the suspected cases met dengue case definition and 10 (3%) met WNV case definition. Among cases met dengue case definition, the most reported symptoms were fever (100%), headache (99%), myalgia (98%) and joint pain (96%) while among cases met WNV definition most common symptoms were fever (100%), headache (100%), photophobia (95%), neck rigidity (50%), and coma (50%). The case fatality was 2% and all death occurred among cases met WNV definition and had neurological manifestations. Out of 42 specimens tested 8 (19%) were positive for dengue IgM, 4 (10%) for WNV IgM and 4 for both.

CONCLUSION

Although the dengue outbreaks were repeatedly reported from Hadramout since 2003, this is the first time meningoencephalitis picture that favors the diagnosis WNV is reported. The risk of introduction of WNV to Yemen through migrating birds, open borders and trade remains high. Strengthen surveillance system especially the lab component with well-focused vector control measures are crucial to prevent transmission.

Key words: Dengue ,WNV outbreak, Yemen.

Unintentional injuries among 9 to 12 grades school children in Sana'a Capital City, Yemen, 2013

Ahmed H.Alshahethi, AW Al Serouri

BACKGROUND

Childhood injuries representing about half of deaths among 15 to 19-year-olds and schoolchildren are nine times more likely to sustain unintentional injuries (UI). However, in Yemen child injuries are largely absent from the educational and health agenda. The aim is to describe UI pattern among schoolchildren in Sana'a city, identify associated factors, and make recommendations.

METHODS

In grades nine through 12 we selected students through multistage probability sampling. Self-administered questionnaire used where students reported UI required medical attention in past 12 months. The questionnaire also covered demographic and socioeconomic characteristics.

RESULTS

Annual overall injury rate was 48 per 100 students with boys had higher rate (57 vs. 43; OR: 1.6, P< 0.0001). Injuries from falling down were commonest (48%) followed by transportation (13%) and burn (10%). Children with divorced parents at higher risk (62% vs. 47%, OR 1.9, P<0.05). Gender differences were observed concerning : cause of injury e.g. 14% females suffered burns vs. 4% males (OR 4.7, P< 0.0001); associated activities e.g. sport amounts for 24% among males vs. 6% among females (OR 5.3, P<0.0001), household chores counts for 25% among females vs. 5% among males (OR 5.7, P<0.0001); and location where injury occurred e.g. while among girls 59% of injuries occurred at home among males 58% occurred at school or way to school: (OR 2.0, P < 0.01).

CONCLUSION

UI among schoolchildren should be recognized as public health concern in Yemen and should be included in the Ministry of Education and Ministry of health agenda. The reported injury mechanisms and activities posing injury risks should have an implications for future interventions and awareness rising camping design and should guide school environment improvement.

Key words: Unintentional injuries, schoolchildren, associated factors, Yemen

Logistical Information

Dear Distinguished Participant

We are pleased to have you in this important conference and we would like to thank you for your participation. Here we would like to provide you with some useful information regarding the conference arrangements:

1. Conference Venue:

The Conference will be held at the Movenpick Hotel Sana'a. Berlin Street, Sana'a, Yemen
+967 154 66 66, e-mail: hotel.sanaa@moevenpick.com

2. Accommodation

For guests from outside Yemen, the accommodation will be arranged at same hotel for conference. Please check with the organizing committee to secure your accommodation

3. Registration:

The registration of the invited participants will take place between 8.30-9.0 am of the first day of in front of the Conference venue

4. Language:

The Conference sessions will be held in English.

5. Working days and hours:
   - Working days are indicated on the conference program.
   - For the first day (Wednesday 26 February) the meeting will be held from 9.00 a.m. to 4.00 p.m. A short coffee breaks/snacks will be served in the morning at 10.30 and another coffee break at 3.00 p.m. The launch will be served between 13.30 to 14.30.
   - For the second Conference day (Thursday 27 February) the meeting will be held from 9.00 a.m. to 12.30 p.m. with short breaks/snacks for refreshments at 10.30. The launch will be served between 12.30 to 13.30.
   - Smoking is not allowed during the conference sessions

6. The Graduation Ceremony

The graduation ceremony for the first Y-FETP will be held on the second Conference day (Thursday 27 February) between 11.00 to 12.00

7. Exchange rate:

Local currency is Yemeni Rial. Currently the rate is 1 US dollar=215 Yemeni Rial

8. Climate:

In February, the average temperature in Sana'a will be between 8 to 14 ^{0}CWE WISH YOU A PLEASANT STAY IN SANA'A

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