DOWNLOAD PDF DENGUE FEVER (EPIDEMICS)

Chapter 1 : Dengue and severe dengue

By the late s, dengue was the most important mosquito-borne disease affecting humans after malaria, with around 40 million cases of dengue fever and several hundred thousand cases of dengue hemorrhagic fever each year. Significant outbreaks of dengue fever tend to occur every five or six months.

COHA Honduran authorities have officially declared a state of emergency due to the massive outbreak of dengue fever this summer. At this time, it is crucial that the international community not only assist the Honduran government with treating dengue fever, but also with implementing measures that could halt the rapid transmission of this deadly epidemic that could potentially claim many more lives by the end of the year. The Dangers of Dengue Fever Dengue fever is transmitted by the Aedes aegypti mosquito, which thrives in low elevation, tropical, and sub-tropical climates, making Central America a hotbed for dengue transmission. The unusually dry weather in Honduras throughout the months prior to the outbreak would normally indicate that a massive epidemic of dengue fever would be unlikely. Dengue fever victims generally exhibit flu-like symptoms including high body temperature, headache, nausea, dizziness, weakness, dehydration, and sometimes a full-body skin rash. In more frightening cases, dengue fever can develop into the far more serious and possibly fatal hemorrhagic fever, which can result in internal bleeding, shock, immense pain, severely low blood pressure, and possible circulatory failure. In addition, there must be an effort by international and domestic agencies, as well as locals to prevent the reproduction of the Aedes aegypti mosquito on a long-term basis to inhibit the rampant transmission of the disease in the future. Besides educating the populace, which is the most important factor in eliminating dengue fever, the government and NGOs should implement some of the practices that have been applied in the past in an effort to rid the region of dengue. For example, initiatives involving the use of chemical procedures designed to eradicate the local Aedes aegypti population were carried out during the last major outbreak of dengue in Other Central American nations have been stricken by the dengue fever epidemic. According to a report, there have been approximately , cases of dengue fever throughout Central America this year. Dengue fever continues to wreck havoc throughout the entire Central American region. AFP Obstacles and Looking to the Future The obstacle to educating the population about prevention practices and fumigation methods is winning the trust of local residents in neighboring rural villages. Greater efforts should be taken to interact with locals on a personal level to assure the population that team members are there to aid those stricken with dengue fever. Without a doubt, the application of prevention methods would be much easier to carry out if the population cooperates with those tasked with implementing the measures to prevent the spread of dengue fever. The World Health Organization has taken steps in Costa Rica to educate the populace about dengue fever. In the upcoming rainy season, the current dengue fever is likely to become even more critical. Honduras, among one of the poorest nations in the Western Hemisphere, is already plagued by poverty, corruption, and widespread violence. Furthermore, in an interview for the Honduran daily La Prensa, health expert Dr. Through educating the populace about measures that can be taken to prevent the disease from becoming even more wide spread, the nation could then be freed from this frightening epidemic that has inflicted a deadly blow to its population. Exclusive rights can be negotiated. For additional news and analysis on Latin America, please go to:

Chapter 2 : Dengue fever - Wikipedia

International travelers' risk of dengue infection can vary dependant on transmission in the area as well as exposure to mosquitoes. You are at greater risk when an outbreak or epidemic is occurring. If your hotel or resort does not have air conditioning or windows and doors with secure, intact.

Dengue Surveillance in the U. Dengue fever DF is caused by any of four closely related viruses, or serotypes: Infection with one serotype does not protect against the others, and sequential infections put people at greater risk for dengue hemorraghic fever DHF and dengue shock syndrome DSS. Transmission of the Dengue Virus Dengue is transmitted between people by the mosquitoes Aedes aegypti and Aedes albopictus, which are found throughout the world. Insects that transmit disease are vectors. Symptoms of infection usually begin 4 â€" 7 days after the mosquito bite and typically last 3 â€" 10 days. In order for transmission to occur the mosquito must feed on a person during a 5- day period when large amounts of virus are in the blood; this period usually begins a little before the person become symptomatic. Some people never have significant symptoms but can still infect mosquitoes. After entering the mosquito in the blood meal, the virus will require an additional days incubation before it can then be transmitted to another human. The mosquito remains infected for the remainder of its life, which might be days or a few weeks. In rare cases dengue can be transmitted in organ transplants or blood transfusions from infected donors, and there is evidence of transmission from an infected pregnant mother to her fetus. But in the vast majority of infections, a mosquito bite is responsible. In many parts of the tropics and subtropics, dengue is endemic, that is, it occurs every year, usually during a season when Aedes mosquito populations are high, often when rainfall is optimal for breeding. These areas are, however, additionally at periodic risk for epidemic dengue, when large numbers of people become infected during a short period. Although Aedes are common in the southern U. Dengue is an Emerging Disease The four dengue viruses originated in monkeys and independently jumped to humans in Africa or Southeast Asia between and years ago. Dengue remained a relatively minor, geographically restricted disease until the middle of the 20th century. DHF was first documented only in the s during epidemics in the Philippines and Thailand. It was not until that large numbers of DHF cases began to appear in the Carribean and Latin America, where highly effective Aedes control programs had been in place until the early s. Top of Page Global Dengue Today about 2. Dengue is endemic in at least countries in Asia, the Pacific, the Americas, Africa, and the Caribbean. Top of Page Dengue in the United States Nearly all dengue cases reported in the 48 continental states were acquired elsewhere by travelers or immigrants. The last reported continental dengue outbreak was in south Texas in Dengue Hemorrhagic Fever â€" U. Most dengue cases in U. Virgin Islands, Samoa and Guam, which are endemic for the virus. Dengue and DHF have been a particular challenge in Puerto Rico , where outbreaks have been reported since and large island-wide epidemics have been documented since the late s. The most recent island-wide epidemic occurred in , when more than 10, cases were diagnosed. Dengue transmission in the Puerto Rico follows a seasonal pattern. Low transmission season begins in March and lasts until June, and high transmission begins in August until November. Top of Page Dengue Surveillance in the U. DF and DHF cases have long been reportable by law to public health authorities in 26 states. Beginning in , all nationally diagnosed dengue infections will be reportable to the CDC. PDSS was instrumental in confirming the endemic presence of dengue transmission in Puerto Rico, identifying the first case of DHF in the Americas, and detecting the first cluster of cases of DHF and the first laboratory-confirmed, dengue-related death in Puerto Rico. Instructions and forms for reporting suspected or confirmed cases of dengue are linked below.

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Chapter 3 : Epidemiology | Dengue | CDC

Dengue fever is a common viral infection in tropical and subtropical regions that is carried and spread by mosquitoes. There has been a dramatic resurgence of epidemic dengue in the tropics.

Click on the image to see a larger version. Selected References These references are in PubMed. This may not be the complete list of references from this article. Immunization with a live attenuated denguevirus candidate vaccine PDK Bull World Health Organ. Global climate change and emerging infectious diseases. Effect of temperature on the vector efficiency of Aedes aegypti for dengue 2 virus. Am J Trop Med Hyg. Can Med Assoc J. Temperature-dependent development and survival rates of Culex quinquefasciatus and Aedes aegypti Diptera: Determinants and predictors of dengue infection in Mexico. Dengue fever epidemics in the South Pacific: A simulation model of the epidemiology of urban dengue fever: Potential impact of global climate change on malaria risk. Potential changes in the distribution of dengue transmission under climate warming. Dynamic life table model for Aedes aegypti Diptera: Dynamic life table model for Aedes aegypti diptera: Surveillance of dengue hemorrhagic fever cases in Thailand. Aedes aegypti in Puerto Rico: First reported outbreak of classical dengue fever at 1, meters above sea level in Guerrero State, Mexico, June Transmission of dengue 1 and 2 viruses in Greece in Aedes aegypti in Malaya. Larval and adult biology. Ann Trop Med Parasitol. Mosquitoes, models, and dengue. Dengue epidemic in Honduras, Bull Pan Am Health Organ. A model of the transmission of dengue fever with an evaluation of the impact of ultra-low volume ULV insecticide applications on dengue epidemics. Reaction kinetics of poikilotherm development. Vector capability of Aedes aegypti mosquitoes for California encephalitis and dengue viruses at various temperatures. Frequency of blood feeding in the mosquito Aedes aegypti. Field studies on the gonotrophic cycle of Aedes aegypti in Bangkok, Thailand. Systems analysis of the yellow fever mosquito Aedes aegypti. Blood-feeding patterns of Aedes aegypti Diptera: Culicidae collected in a rural Thai village.

Chapter 4 : History and Origin of Dengue Virus

Severe dengue (also known as Dengue Haemorrhagic Fever) was first recognized in the s during dengue epidemics in the Philippines and Thailand. Today, severe dengue affects most Asian and Latin American countries and has become a leading cause of hospitalization and death among children and adults in these regions.

See Article History Alternative Titles: Complication of dengue fever can give rise to a more severe form, called dengue hemorrhagic fever DHF , which is characterized by hemorrhaging blood vessels and thus bleeding from the nose, mouth, and internal tissues. Untreated DHF may result in blood vessel collapse, causing a usually fatal condition known as dengue shock syndrome. These serotypes are members of the Flavivirus genus , which also contains the viruses that cause yellow fever , and can occur in any country where the carrier mosquitoes breed. NS1 proteinThe dengue NS1 protein is thought to play a critical role in severe dengue disease by triggering immune reactions associated with vascular leak and shock, which are the major causes of death in persons suffering from dengue hemorrhagic fever. Displayed by permission of The Regents of the University of California. Viral transmission The carrier incriminated throughout most endemic areas is the yellow-fever mosquito , Aedes aegypti. The Asian tiger mosquito, A. It then requires 8 to 11 days to incubate the virus before the disease can be transmitted to another individual. Thereafter, the mosquito remains infected for life. The virus is injected into the skin of the victim in minute droplets of saliva. The spread of dengue is especially unpredictable because there are four serotypes of the virus. Infection with one typeâ€"though it confers lifetime immunity from reinfection with that type of dengueâ€"does not prevent an individual from being infected by the other three types. Diagnosis and treatment Diagnosis is made on clinical findings, namely, sudden onset, moderately high fever , excruciating joint pains, intense pain behind the eyes, a second rise in temperature after a brief remission, and particularly the type of rash and decided reduction in neutrophilic white blood cells. There is no specific therapy; therefore attention is focused on relieving the symptoms. In DHF prompt medical attention on maintaining circulating fluid volume can improve chances for survival. Temporary preventive measures must be taken to segregate suspected as well as diagnosed cases during their first three days of illness and, by screens and repellents, to keep mosquitoes from biting more people. Fundamental in the control of the disease is the destruction of mosquitoes and their breeding places. Scientists have attempted to manipulate populations of A. One such approach entails transforming populations of A. The spread of the maternally inherited bacterium within a population is facilitated by cytoplasmic incompatibility, which prevents the production of viable offspring when uninfected females mate with infected males but permits the survival of bacteria-carrying offspring when infected females mate with infected males. The first successful establishment of Wolbachia in natural A. Dengue through history The earliest account of a denguelike disease comes from the Jin dynasty â€" ce in China. There is also evidence that epidemics of illnesses resembling dengue occurred in the 17th century. However, three epidemics that took place in the late 18th century mark the arrival of the disease that is today recognized as dengue fever. Two of these outbreaks involved an illness decidedly similar in symptoms and progression to dengue, and both occurred in â€"one in Cairo and the other in Batavia now Jakarta in the Dutch East Indies now Indonesia , which was reported by Dutch physician David Bylon. The third epidemic happened in in Philadelphia , Pa. American statesman and physician Benjamin Rush , who treated afflicted patients during the Philadelphia epidemic, provided the first clinical description of dengue in his Account of the Bilious, Remitting Fever, which was published in Because all three 18th-century epidemics involved very similar diseases and occurred in port cities, it is believed that dengue virus was spread from one continent to another via ships. Thus, the spread of dengue depended on overseas survival of mosquito vectors, as well as on arrival in areas with both the necessary environmental conditions to support vector survival and a susceptible population into which the virus could be introduced. This pattern of transport probably also facilitated the emergence of new viral serotypes. In the early s Australian naturalist Thomas Lane Bancroft identified Aedes aegypti as a carrier of dengue fever and deduced that dengue was caused by an organism other than a bacterium or parasite. During World War II , dengue emerged in Southeast Asia and rapidly spread to other parts of the world, inciting a pandemic. About

this time the causative flavivirus was isolated and cultured independently by Japanese physicians Susumu Hotta and Ren Kimura and by American microbiologist Albert Bruce Sabin. In the s hemorrhagic dengue appeared in Southeast Asia, where it became a common cause of death among children in the s. The serotypes continued to spread on a pandemic level, eventually reaching areas of South and Central America, Cuba, and Puerto Rico , where in an epidemic lasting from July to December affected some , people. In the following decades the increasing incidence of dengue, particularly DHF, persisted. In the World Health Organization reported that approximately 2. Learn More in these related Britannica articles:

Chapter 5 : Cuba Joins Mexico and Indonesia Confirming Dengue Virus Outbreaks â€" Precision Vaccinati

Dengue fever is an infectious, mosquito-borne disease found most often in the tropics and subtropics. It causes severe headaches, joint pain, and, if left untreated, severe bleeding.

A pandemic began in Southeast Asia in the s, and by DHF had become a leading cause of death among children in the region. Other children then became victims to the new symptom. By the late s, dengue was the most important mosquito-borne disease affecting humans after malaria, with around 40 million cases of dengue fever and several hundred thousand cases of dengue hemorrhagic fever each year. Significant outbreaks of dengue fever tend to occur every five or six months. The cyclical rise and fall in numbers of dengue cases is thought to be the result of seasonal cycles interacting with a short-lived cross-immunity[clarification needed] for all four strains in people who have had dengue. When the cross-immunity wears off the population is more susceptible to transmission whenever the next seasonal peak occurs. Thus over time there remain large numbers of susceptible people in affected populations despite previous outbreaks due to the four different serotypes of dengue virus and the presence of unexposed individuals from childbirth or immigration. There is significant evidence, originally suggested by S. One model to explain this process is known as antibody-dependent enhancement ADE , which allows for increased uptake and virion replication during a secondary infection with a different strain. Through an immunological phenomenon, known as original antigenic sin , the immune system is not able to adequately respond to the stronger infection, and the secondary infection becomes far more serious. There was a serious outbreak in Rio de Janeiro in February affecting around one million people and killing sixteen. Cesar Maia , mayor of the city of Rio de Janeiro , denied that there was serious cause for concern, saying that the incidence of cases was in fact declining from a peak at the beginning of February. In the year , there were seven deaths from dengue shock syndrome. Nearby Guadeloupe and Martinique , in the French Caribbean, were affected as well: The and dengue outbreaks in Key West Florida [18] [19] are similar to the Texas 25 cases and Hawaii cases outbreaks, which were locally sustained on American soil and not a result of travelers returning from endemic areas. As of 3 March there were confirmed cases of dengue fever, in a residential population of , Outbreaks were subsequently declared the neighbouring cities and towns of Townsville outbreak declared 5 January , Port Douglas 6 February , Yarrabah 19 February , Injinoo 24 February , Innisfail 27 February and Rockhampton 10 March There have been occurrences of dengue types one, two, three, and four in the region. On March 4, , Queensland Health had confirmed an elderly woman had died from dengue fever in Cairns, in the first fatality since the epidemic began last year. The statement said that although the woman had other health problems, she tested positive for dengue and the disease probably contributed to her death. An epidemic broke out in Bolivia in early , in which 18 people died and 31, were infected. In , in Argentina , a dengue outbreak was declared the northern provinces of Chaco , Catamarca , Salta , Jujuy , and Corrientes , with over cases reported as of April 11, by the Health Ministry. This is addressed by asking people to dry out all possible water reservoirs from where mosquitoes could proliferate which is, in other countries, known as "descacharrado". There were information campaigns concerning prevention of the dengue fever; and the government is fumigating with insecticide in order to control the mosquito population. Subsequent outbreaks occurred in â€" and , and with decreasing magnitude over time. As many cases go unreported, higher statistics here do not necessarily indicate a larger outbreak. In , Latin America alone reported a sum of 1.

Chapter 6 : WHO | What is dengue?

Today, a bite from the wrong mosquito can cause severe fever, organ failure, and even death. No, this mosquito is not carrying malaria as you may have thought, it is carrying dengue.

Highlight and copy the desired format. Emerging Infectious Diseases, 19 6 , Abstract An improved understanding of heterogeneities in dengue virus transmission might provide insights into biological and ecologic drivers and facilitate predictions of the magnitude, timing, and location of future dengue epidemics. To investigate dengue dynamics in urban Ho Chi Minh City and neighboring rural provinces in Vietnam, we analyzed a year monthly time series of dengue surveillance data from southern Vietnam. The per capita incidence of dengue was lower in Ho Chi Minh City than in most rural provinces; annual epidemics occurred 1â€”3 months later in Ho Chi Minh City than elsewhere. The timing and the magnitude of annual epidemics were significantly more correlated in nearby districts than in remote districts, suggesting that local biological and ecologic drivers operate at a scale of 50â€” km. These findings can aid the targeting of vector-control interventions and the planning for dengue vaccine implementation. Dengue is a growing international public health problem for which a licensed vaccine, therapeutic drugs, and effective vector control programs are lacking. The increasing number of cases is associated with an expanding geographic range and increasing intensity of transmission in affected areas 1 , 2. The dynamics of dengue in disease-endemic areas are characterized by strong seasonality and multiannual epidemic peaks 3 , with substantial interannual and spatial heterogeneity in the magnitude of seasonal epidemics 4. Extrinsic factors, including climatic and environmental variables, have been hypothesized to drive annual seasonality; intrinsic factors associated with human host demographics, population immunity, and the virus, drive the multiannual dynamics 5 â€” 7. In Thailand, a spatiotemporal analysis showed that the multiannual cycle emanated from Bangkok out to more distant provinces 9. Knowledge of spatial and temporal patterns in dengue incidence at a subnational level is relevant for 2 main reasons: For both of these reasons, detailed spatial resolution is useful because aggregated datasets can obscure some of the factors that influence the timing and size of individual local epidemics. In southern Vietnam, dengue occurs year-round; a marked seasonal peak occurs during the rainy months of Juneâ€”December, and the number of cases has been increasing over the past 15 years As in many dengue-endemic settings, the dengue surveillance system in Vietnam relies on passive reporting of clinically diagnosed dengue in hospitalized patients. Vector control is the primary tool available for dengue prevention and control. In Vietnam, vector control is pursued through a targeted approach of low-volume space spraying of households around clusters of reported dengue cases. This strategy faces limitations in timeliness and sensitivity because of the reliance on and response to case reports for hospitalized patients only. A predictive epidemiologic tool that enables prioritization of limited resources for the most cost-effective reduction in cases would be highly valued in dengue-endemic settings. To investigate spatial and temporal trends for dengue in southern Vietnam, we used a monthly time series of dengue surveillance data over 10 years, disaggregated to the district level. We analyzed the periodicity of dengue incidence, determined whether annual epidemics consistently originate in and spread from Ho Chi Minh City HCMC or another location, and characterized the differences in the magnitude and timing of epidemics among provinces and districts. Vietnam and the southern 19 provinces included in this analysis. The map shows current administrative boundaries; for our analysis, we aggregated 2 provinces Can Tho and Hau Giang to reflect Administrative boundaries for the southern region of Vietnam in were used for consistency across the study period â€” In , the total population of the study area was Demographic data were obtained from the Government Statistics Office Only hospitalized dengue patients are reported, and the case definition is a clinical diagnosis of dengue at hospital discharge. Most cases are not laboratory confirmed. The time series used in this analysis included all dengue cases reported from January 1, , through December 31, , from the 19 provinces of southern Vietnam; cases were aggregated by month of hospital admission and district of residence. No identifying personal information was included in the data. Determining Dengue Periodicity To explore the periodicity in the dengue incidence time series, we performed continuous wavelet transform, which decomposes the time series into time and frequency

components. Calculation of the wavelet power spectrum quantifies the distribution of the variance of the time series in the timeâ€"frequency domain 14 , Significance levels were computed with an appropriate bootstrapping scheme that used the Markov process and preserved the short-term temporal correlation of the raw series, the HMM Surrogate 17 ; 1, HMM Surrogate series were used. Quantifying Synchrony To explore the temporal relationship between dengue time series across the 19 provinces and districts, we subjected each time series to wavelet decomposition as described above. Using the imaginary and the real parts of the wavelet transform in the annual mode 0. The wavelet decomposition was also used as a band-pass filter for filtering the raw time series in the annual mode to obtain the seasonal oscillations, which were used together with the phase differences for computing the pairwise delay in days between district and province dengue time series 8 , equation 8. We used Spearman and Pearson correlation tests to assess whether larger dengue epidemics were more synchronous, as defined by the variance in pairwise interprovince or interdistrict delays as described above. Additionally, pairwise correlations between district-level and province-level dengue time series were made in 3 transformed datasets: The relationship between these correlation coefficients and the intervening distance between provinces or districts was assessed by using the nonparametric spline covariance function from the NCF spatial nonparametric covariance function package in R 19 R 2. We calculated pairwise distances between districts and provinces by using geographic coordinates of district and province centroids in R. Predicting Seasonal Epidemic Magnitude To determine whether the magnitude of a seasonal dengue epidemic could be predicted by the dengue activity in the previous interepidemic period, we used a linear model of log-transformed dengue incidence during the epidemic period Aprilâ€"December in each district or province as a function of the incidence during the preceding dry period Januaryâ€"March in the same district or province. These definitions of epidemic and dry periods were decided a priori and were based on scrutiny of the seasonal pattern of dengue across the study period; in HCMC, these periods were shifted a priori 1 month later Mayâ€"January and Februaryâ€"April, respectively to account for the fact that the trough in dengue incidence occurred markedly later in HCMC than in other provinces. Results Temporal Trends Figure 2 Figure 2. Dengue time series from the 19 provinces and districts in southern Vietnam, â€" A Monthly aggregate time series of dengue cases reported from provinces. B Monthly dengue incidence in During â€", a total of , dengue cases were reported from the southern 19 provinces of Vietnam; median was 66, cases annually range 22,â€"88, cases. Differences in temporal trends between the provinces are apparent in Figure 2 , panel B, which shows that in terms of per capita incidence, substantially higher epidemic peaks are reached in provinces outside HCMC than within HCMC. The annual peak also appears consistently later in HCMC than in other provinces. The time series for individual provinces are shown in the online Technical Appendix Figure 1 wwwnc. A visual comparison of time series between the districts Figure 2 , panel C suggests overall seasonal synchrony across southern Vietnam but with geographic differences in the timing and magnitude of high-incidence periods at the district level. Dengue Periodicity Figure 3 Figure 3. Wavelet analysis of dengue periodicity, â€" Wavelet analysis of the aggregate time series showed a strong annual periodicity but no multiannual cycle Figure 3 , panel A. To investigate spatial differences in dengue periodicity, we performed wavelet analyses for individual province time series online Technical Appendix Figure 2. An annual cycle was apparent in all provinces but with substantial heterogeneity in the relative strength of the multiannual component. In several other provinces, a transient subdominant multiannual cycle was observed, but these cycles are difficult to interpret epidemiologically. Correlation across provinces A or districts B between annual dengue incidence and variation in epidemic timing. Epidemic timing represents the pairwise interprovince or interdistrict delay between wavelet transformed annual dengue Despite the pronounced seasonality of dengue, we observed substantial heterogeneity in the timing of annual epidemics across the study region and period. The average interval between the province experiencing the earliest and latest dengue epidemic within a given year was The interprovince and interdistrict lag in the onset of seasonal dengue epidemics was significantly negatively correlated with the overall magnitude of the epidemic Figure 4 ; in other words, dengue epidemics are significantly more synchronous throughout the region in years with higher overall incidence than in years with lower incidence. Figure 5 Figure 5. Spatiotemporal patterns in annual dengue epidemics in southern Vietnam. To explore further the observation that annual dengue epidemics occur later in HCMC than

elsewhere, we plotted the phase interval in days between the dengue time series in each province relative to HCMC, averaged across the year period not shown and in each individual year Figure 5 , panel A. A multifocal origin of seasonal dengue epidemics in southern Vietnam was revealed, in which the epidemic cycle in each of the 18 provinces preceded HCMC by a median of 55 days range 26â€”90 days averaged over the year period. The dengue epidemic occurred later in HCMC than in all other provinces in all but 2 years and , and in these 2 years, in only 1 province did the dengue epidemic occur later than in HCMC. Figure 5 , panel B, shows the equivalent analysis for district-level time series. These analyses indicated that in some locations Binh Phuoc to the north of HCMC, Lam Dong to the northwest, Soc Trang in the far south, and Kien Giang in the southwest , despite their considerable distance from one another, dengue epidemics were consistently among the earliest each year Figure 1. However, the earliest epidemics often occur in multiple simultaneous locations, and there is no clear spatial pattern for the movement of the dengue epidemic within a given season. Signals of early epidemics in Lam Dong should be treated with caution because the case numbers for the dry and the rainy seasons were small. Synchrony in Dengue Dynamics Figure 6 Figure 6. Spatial coherence in the magnitude A and B and timing C and D of dengue epidemics in southern Vietnam. District data are shown in panels A and C, and province Overall, dengue epidemics across southern Vietnam were more highly correlated in timing than in incidence Figure 6 , horizontal lines , consistent with the pronounced seasonality of dengue virus DENV transmission despite heterogeneities in epidemic magnitude. Districts within km of each other were significantly more likely to have concurrent high-incidence and low-incidence years Figure 6 , panel A , and the degree of correlation increased with increasing proximity. This spatial dependence was observed also for province-level data Figure 6 , panel B out to km. The timing of dengue epidemic cycles was less spatially dependent. Spatially dependent synchrony out to km was also observed when correlating the raw monthly time series, which takes the timing and the magnitude of dengue epidemics into account Technical Appendix Figure 3. Dry season dengue incidence as a predictor of the magnitude of the subsequent dengue epidemic. Plots show the association between annual epidemic incidence Aprilâ€”December and the preceding dry season dengue We found a significant positive association between dengue incidence during the dry season and the magnitude of the subsequent dengue epidemic in a given province or district. Using province-level data, we found that an increase of 1 SD above the mean dengue incidence during the dry season was associated with an increase of 0. Stratified by province, this association held for 12 of the 19 provinces data not shown ; this finding might reflect a lack of power to detect such an association with 10 data points. Discussion In southern Vietnam, dengue exhibits pronounced seasonal peaks that coincide with the rainy season and causes tens of thousands of hospitalizations every year. Within this overall high-transmission setting, substantial spatial and temporal heterogeneity is apparent from our monthly district-level time series analysis. Several characteristics of the epidemic cycle in this setting could help inform public health efforts to prevent and control dengue. These patterns suggest possible differences in the intrinsic and extrinsic drivers of DENV transmission in these provinces; however, interpretation of these findings must take into account the limitations of wavelet analysis, especially within a year time series, in which it is difficult to obtain strong statistical support for long multiannual cycles. Further considerations in the interpretation of our findings relate to the limitations of dengue surveillance data as a proxy for DENV transmission. A variable majority of DENV infections are asymptomatic 20 , and it is possible that the observed disease dynamics are an imperfect reflection of the underlying DENV transmission dynamics. Furthermore, case surveillance data for dengue, as for many diseases, have sensitivity and specificity limitations, because of underreporting and a lack of laboratory confirmation, respectively. Dengue is typically thought of as an urban disease 1 , 21 â€” HCMC is the major urban center in southern Vietnam, but the per capita incidence reached there during seasonal dengue peaks is substantially lower than in most of the other less urban provinces. This finding supports evidence from Cambodia 24 , Thailand 25 , and Vietnam 26 that dengue presents a health challenge in periurban and rural settings as well as in urban centers. In fact, the presence of multiple locations with early dengue epidemics indicates that there may not be a consistent year-to-year spatial pattern of DENV transmission and no consistent geographic source from which dengue epidemics emanate. These findings lead directly to new research questions for dengue in southern Vietnam, to explore what factors influence the timing and size of the

annual epidemic wave in each province. Although the dynamics we describe give the appearance of dengue traveling from several early foci to HCMC each season, we think this is unlikely for 3 reasons. First, dengue cases occur throughout the dry season in HCMC as well as in other provinces; hence, re-introduction of DENV is not required to initiate the seasonal increase in cases.

Chapter 7 : Sri Lanka dengue fever epidemic - Outbreak News Today

Honduran authorities have officially declared a state of emergency due to the massive outbreak of dengue fever this summer.[1] There have been approximately 12, reported infections throughout the nation this year, almost triple the number of cases in the first eight months of [2, 3] Though.

Key facts Dengue is a mosquito-borne viral infection. The infection causes flu-like illness, and occasionally develops into a potentially lethal complication called severe dengue. The global incidence of dengue has grown dramatically in recent decades. Dengue is found in tropical and sub-tropical climates worldwide, mostly in urban and semi-urban areas. Severe dengue is a leading cause of serious illness and death among children in some Asian and Latin American countries. Dengue prevention and control depends on effective vector control measures. Dengue is a mosquito-borne viral disease that has rapidly spread in all regions of WHO in recent years. Dengue virus is transmitted by female mosquitoes mainly of the species Aedes aegypti and, to a lesser extent, Ae. This mosquito also transmits chikungunya, yellow fever and Zika infection. Dengue is widespread throughout the tropics, with local variations in risk influenced by rainfall, temperature and unplanned rapid urbanization. Severe dengue also known as Dengue Haemorrhagic Fever was first recognized in the s during dengue epidemics in the Philippines and Thailand. Today, severe dengue affects most Asian and Latin American countries and has become a leading cause of hospitalization and death among children and adults in these regions. Recovery from infection by one provides lifelong immunity against that particular serotype. However, cross-immunity to the other serotypes after recovery is only partial and temporary. Subsequent infections by other serotypes increase the risk of developing severe dengue. Global burden of dengue The incidence of dengue has grown dramatically around the world in recent decades. The actual numbers of dengue cases are underreported and many cases are misclassified. The number of cases reported increased from 2. Although the full global burden of the disease is uncertain, the initiation of activities to record all dengue cases partly explains the sharp increase in the number of cases reported in recent years. Other features of the disease include its epidemiological patterns, including hyper-endemicity of multiple dengue virus serotypes in many countries and the alarming impact on both human health and the global and national economies. Distribution trends Before , only 9 countries had experienced severe dengue epidemics. Recently the number of reported cases has continued to increase. Not only is the number of cases increasing as the disease spreads to new areas, but explosive outbreaks are occurring. The threat of a possible outbreak of dengue fever now exists in Europe as local transmission was reported for the first time in France and Croatia in and imported cases were detected in 3 other European countries. In , an outbreak of dengue on the Madeira islands of Portugal resulted in over 2 cases and imported cases were detected in mainland Portugal and 10 other countries in Europe. Among travellers returning from low- and middle-income countries, dengue is the second most diagnosed cause of fever after malaria. Dengue was also reported in Japan after a lapse of over 70 years. In , Delhi, India, recorded its worst outbreak since with over 15 cases. The Island of Hawaii, United States of America, was affected by an outbreak with cases reported in and ongoing transmission in The year was characterized by large dengue outbreaks worldwide. The Region of the Americas region reported more than 2. The Western Pacific Region reported more than suspected cases of dengue in , of which the Philippines reported and Malaysia cases, representing a similar burden to the previous year for both countries. The Solomon Islands declared an outbreak with more than suspected. In the African Region, Burkina Faso reported a localized outbreak of dengue with probable cases. In , a significant reduction was reported in the number of dengue cases in the Americas - from 2 cases in to cases in Panama, Peru and Aruba were the only countries that registered an increase in cases during In early Paraguay and Argentina reported dengue outbreaks. An estimated people with severe dengue require hospitalization each year, and with an estimated 2. Transmission The Aedes aegypti mosquito is the primary vector of dengue. The virus is transmitted to humans through the bites of infected female mosquitoes. After virus incubation for 4â€”10 days, an infected mosquito is capable of transmitting the virus for the rest of its life. Infected symptomatic or asymptomatic humans are the main carriers and multipliers of the virus, serving as a source of the virus for

uninfected mosquitoes. Patients who are already infected with the dengue virus can transmit the infection for 4â€”5 days; maximum 12 via Aedes mosquitoes after their first symptoms appear. The Aedes aegypti mosquito lives in urban habitats and breeds mostly in man-made containers. Unlike other mosquitoes Ae. Aedes albopictus, a secondary dengue vector in Asia, has spread to North America and more than 25 countries in the European Region, largely due to the international trade in used tyres a breeding habitat and other goods e. Its spread is due to its tolerance to temperatures below freezing, hibernation, and ability to shelter in microhabitats. Characteristics Dengue fever is a severe, flu-like illness that affects infants, young children and adults, but seldom causes death. Symptoms usually last for 2â€”7 days, after an incubation period of 4â€”10 days after the bite from an infected mosquito. Severe dengue is a potentially deadly complication due to plasma leaking, fluid accumulation, respiratory distress, severe bleeding, or organ impairment. The next 24â€”48 hours of the critical stage can be lethal; proper medical care is needed to avoid complications and risk of death. Treatment There is no specific treatment for dengue fever. In November , the results of an additional analysis to retrospectively determine serostatus at the time of vaccination were released. The analysis showed that the subset of trial participants who were inferred to be seronegative at time of first vaccination had a higher risk of more severe dengue and hospitalizations from dengue compared to unvaccinated participants. WHO position The live attenuated dengue vaccine CYD-TDV has been shown in clinical trials to be efficacious and safe in persons who have had a previous dengue virus infection seropositive individuals , but carries an increased risk of severe dengue in those who experience their first natural dengue infection after vaccination seronegative individuals. For countries considering vaccination as part of their dengue control programme, pre-vaccination screening is the recommended strategy. With this strategy, only persons with evidence of a past dengue infection would be vaccinated based on an antibody test, or on a documented laboratory confirmed dengue infection in the past. Decisions about implementing a pre-vaccination screening strategy will require careful assessment at the country level, including consideration of the sensitivity and specificity of available tests and of local priorities, dengue epidemiology, country-specific dengue hospitalization rates, and affordability of both CYD-TDV and screening tests. Vaccination should be considered as part of an integrated dengue prevention and control strategy. There is an ongoing need to adhere to other disease preventive measures such as well-executed and sustained vector control. Individuals, whether vaccinated or not, should seek prompt medical care if dengue-like symptoms occur. Prevention and control At present, the main method to control or prevent the transmission of dengue virus is to combat vector mosquitoes through: Careful clinical detection and management of dengue patients can significantly reduce mortality rates from severe dengue.

Chapter 8 : Thailand is experiencing its largest dengue epidemic in more than two decades - Samui Times

Dengue fever, a very old disease, has reemerged in the past 20 years with an expanded geographic distribution of both the viruses and the mosquito vectors, increased epidemic activity, the development of hyperendemicity (the cocirculation of multiple serotypes), and the emergence of dengue hemorrhagic fever in new geographic regions.

Author theCaribbeanCurrent An outbreak of dengue fever has recently become a threatening disease in Asia and in fact around the world and it is believed that as it gets worse it will be difficult to get under control. Unfortunately, there are no definite treatments to put a stop to this painful disease, except for a general approach on preventative measures and by controlling the vector carrier mosquitoes. Dengue fever is a rapidly growing, mosquitoâ€"borne disease caused by dengue virus, related to the viruses that cause yellow fever. There are four kinds of dengue virus that are mainly spread by Aedes aegypti mosquito that originated in Africa and now is widespread in Asia, the Pacific islands, and South America. The virus is transmitted into a human when he is bitten by an infected mosquito, which has received the infection while stinging another infected person. Most recently dengue epidemic has struck in Puerto Rico where nearly of dengue fever cases have been reported and six people have died from it. And now this painful disease has increased at a rate of 59 percent over October as it continues to spread through India. The infection has also spread into America with 28 of its states being at risk. To date, most cases occur in people who got infected by dengue mosquito when outside of North America. Symptoms of dengue fever include unexpected occurrence of high fever accompanied with painful headaches. You may also feel severe joint and muscle aches and pain. Feeling nauseated and vomiting has also been reported. Prevention is the key to acquiring the disease. Protect yourself from dengue fever by avoiding being bitten by infected mosquitoes. You can do so by using mosquito repellent both indoors and outdoors, wearing full covering clothing when you are out and making sure that windows and door screens are fully functional. Particularly if you are living in tropical areas that are prone to dengue outbreaks, it is best to use mosquito nets while sleeping and avoid going out after sunset as much as possible. But the best way to get rid of this nuisance permanently is to take adequate steps to keep the mosquito population down. Destroy any potential places where mosquito can breed such as old tires and containers that can collect rain water. One can also breed fishes like Gambusia in water tanks as they feed on the mosquito larvae and help us destroy their existence. Symptoms usually last for 2â€"7 days, after an incubation period of 4â€"10 days after the bite from an infected mosquito. Severe dengue is a potentially deadly complication due to plasma leaking, fluid accumulation, respiratory distress, severe bleeding, or organ impairment. The next 24â€"48 hours of the critical stage can be lethal; proper medical care is needed to avoid complications and risk of death. If one of your family members gets infected, protect him, other members as well as yourself from getting bitten from infected mosquitoes and of course, seek treatments as soon as possible. There are no specific medications and vaccines to treat dengue fever. But certain precautions can prevent the conditions from getting worse. For example, avoid medicines with aspirins as it can worsen any bleeding. You should also have plenty of rest and drink lots of water at frequent intervals. Being an epidemic disease, a serious effort is needed to prevent any outbreak of dengue fever and eradicate it worldwide from its roots. Scientists are conducting thorough researches to develop effective medicines and vaccine against dengue. If not controlled, more death will occur in the future, spreading this destructive disease.

Chapter 9 : Dengue epidemic reported on RÃ©union Island - Outbreak News Today

Dengue is a viral disease usually transmitted by Aedes aegypti mosquitoes. Dengue outbreaks in the Americas reported in medical literature and to the Pan American Health Organization are described.

Highlight and copy the desired format. Emerging Infectious Diseases, 5 4 , The cause was confirmed as dengue virus type 2, by virus cultivation and indirect immunofluorescence with type-specific monoclonal antibodies. This is the largest such outbreak reported from India, indicating a serious resurgence of dengue virus infection. We confirmed the etiologic agent of this outbreak as dengue virus type 2 by virus cultivation and indirect immunofluorescence with type-specific monoclonal antibodies. Dengue fever occurs worldwide, in nearly all tropical and subtropical countries 1. Dengue virus was first isolated in India in 2. Some cases of DHF were seen for the first time in 7. These were confirmed only serologically, by the hemagglutination inhibition test. The outbreak started the last week of August and continued until the end of November, peaking in mid-October 8 , 9. A total of 8, cases were reported, with a death rate of 4. We report results of virologic testing of samples received at the All India Institute of Medical Sciences from patients with suspected dengue fever or denguelike illness from Delhi and its adjoining areas, along with a profile of the culture-confirmed cases. Virus isolation was carried out on samples received on ice from patients with acute illness. Serum was separated aseptically and stored at o C. On days 5 and 10, cells were tested by indirect immunofluorescence assay IFA by using monoclonal antibodies to dengue virus types If IFA was negative for dengue viruses on first passage, a second passage was made, and cells were again harvested on days 5 and 10 for IFA. Of the 27 isolates, 26 were identified as dengue virus type 2 and one as dengue virus type 1. Of the 27 culture-positive patients, 11 The ratio of male to female in these 27 cases was The median duration of fever at the time of viral isolation was 4 days, on the basis of 24 culture-positive cases for which the duration of fever was available. After 5 days of fever, virus isolation was possible only from one patient. The median duration of viremia in dengue type 2 infection was also found to be 4 days in a detailed study on dengue viremia from Jakarta, Indonesia In some samples, antibodies could be detected as early as the fifth day of fever. Analysis of the outbreaks of dengue virus infection in Delhi indicates a seasonal trend. All outbreaks including the one reported here occurred during the monsoon rainy season August to November and subsided with the onset of winter. Serologic studies have also shown that dengue infection has been endemic in this region His interests include diagnostic virology, viral immunology, and tuberculosis. Top Acknowledgment We thank Duane J. Gubler for supplying diagnostic reagents and protocols for our work and the director, National Institute of Virology, Pune, India, for providing known strains of all dengue virus types. We also thank Milan Chakraborty and Raj Kumar for excellent technical support. Dengue haemorrhagic fever and dengue shock syndromeâ€”introduction, historical and epidemiological background. Monograph on dengue haemorrhagic fever. Research on dengue during World War II. Am J Trop Med Hyg. Dengue fever in India. Investigations on an outbreak of dengue in Delhi in Indian J Med Res. Dengue haemorrhagic fever in children in Delhi. Bull World Health Organ. Saluzzo JE, Dodet B, editors. Factors in the emergence of arbovirus diseases. Round table conference seriesâ€”dengue outbreak in Delhi: Ranbaxy Science Foundation; Mosquito cell and specific monoclonal antibodies in surveillance for dengue viruses. Viraemia in patients with naturally acquired dengue infection. Immunoglobulin M antibody capture enzyme linked immunosorbent assay for the diagnosis of St Louis encephalitis.