The perspective of measles outbreak in wales from the point of view of public hea...

An outbreak of a disease is a significant health challenge that requires implementation of measures to curb similar future epidemic. The report deliberates outbreak of measles that happened in Wales, England between November 2012 and July 2013. It is purposed to discuss the evaluation of Wales' measles outbreak from a public health perspective. Moreover, this report will provide an insight into the implementation of immediate intervention measures to control the risk of transmitting the infection. The report will also highlight the causes of measles virus. Finally, the subsequent measures to prevent future incidences will be outlined. The report will conclude by outlining a summary of the highlighted issues.

BACKGROUND

The Swansea Health Protection Team received measles index case between 9th and 16th of November 2012. The disease originated from the South West of UK. Three kids had returned from a holiday camp during the autumn school mid-term break. The kids were not from the same school and were also not related. On 26th November, a fourth case was reported. The team learned that 29 other children had been infected through contact with the two affected children (Wales Online, 2013). Ramsay, (2013) adds that these infections account for how measles started spreading in the Wales community.

Wales experienced a major outbreak of measles between November 2012 and July 2013 when MMR (Measles Mumps and Rubella) vaccine was introduced (Pegorie et al., 2013). According to Abertawe Bro Morgannwg University Health Board et al., 2013 both the South West Wales and Health Board Departments received 1202 measles incidences through Public Health

Wales over a period of nine months. The most affected areas included Hywel Dda, Powys, and Albertawe Bro Morgannwg. The received cases included 88 hospitalizations and one fatality.

The Wales outbreak and spreading of measles were mainly attributed to reduced uptake of Mumps and Rubella (MMR) vaccine in the UK because of paternal concerns. The parental issues arose from the late 1990's Lancet Journal Publication that linked MMR vaccine with autism and bowel cancer. The journal received a countrywide media attention and coverage hence accelerating doubts on the safety of MMR vaccine. Stanton et al., (2015) established that yearly MMR dose take-up dropped by 11% for children aged 24 months. Furthermore, the drop was about 20% in designated outbreak areas of Wales. Donovan & Bedford, (2013) concluded that a significant number of children did not receive MMR vaccination hence increasing their vulnerability to measles attack. The situation worsened despite nationwide campaigns to improve uptake of MMR vaccine and instill public confidence. The spread of measles among young adults and children between November 2012 and July 2013 affected close to one hundred schools including nursery schools. The period is considered the peak of the measles outbreak in Wales.

INVESTIGATION OF THE OUTBREAK

Is the case an outbreak?

An outbreak refers to an infection or a health event that happens at a greater frequency than expected at a specified place and time. It affects people in a defined geographical area or community. Also, an outbreak can be said to be two or more cluster of incidences experiencing the same disease that can be linked in place and time (Gupta et al., 2005). An

outbreak area denotes a place where there is a widespread virus transmission within a population. The occurrence of an outbreak is determined by comparing the expected number of cases with observed cases and establishing if the observed cases outnumber the expected. Often, it is done by comparing a present number of observed cases with past months, years or even weeks. Friis (2010) depicts that for noticeable infection such as measles, the health department surveillance data can be useful in making such decision.

The term " outbreak area" applies to large populations. For example, a population greater than 100, 000. However, local outbreaks can happen without widespread transmission within the population (Carr et al., 2007). Bruce et al., (2016) highlights three epidemiological indicators of widespread disease transmission in a population. Foremost, local outbreaks that involve more than three different unlinked institutions or schools. Secondly, the majority of the confirmed cases occurs in general population without notifiable links to other outbreak regions or known local outbreak areas. Finally, widespread transmission of an outbreak consists more than 30% laboratory confirmation of the reported incidences. In the case of Wales' outbreak, the defined areas were Llanelli, Swansea, and Bridging. These are the areas where the disease was widely circulating in the population.

The definition above confirms that indeed the Wales' incident was an outbreak. The Swansea Health Protection Team reports indicated that there were 432 number of confirmed measles cases between November 2012 and July 2013 (nine months period). The previous surveillance data had reported

only 78 confirmed cases. Additionally, the surveillance period was between 2000 and 2007 (seven years period) (World Health Organization, 2009).

The investigation begins by confirming that Measles outbreak in Wales is an outbreak. However, there are also other factors that influence the decision to initiate the investigation. These includes severity of the infection, the capacity of spreading, whether the illness poses immediate health challenge and availability of resources. Measles is a severe disease that can be very vital and potentially spreads fast (Abertawe Bro Morgannwg University Health Board et al., 2013). Thus, this is an outbreak that warrants an immediate investigation.

An outbreak control team (OCT) must be formed when investigating an outbreak. OCT is a group of individuals from different public organizations who are brought together primarily to control transmission of an infection during the outbreaks. It is done by accessing the extent and the range of the outbreak. Thus, the main function of OCT is to organize and approve all activities of agencies involved in the research and implementation of control measures. The number of OCT members varies. However, the prominent members include local disease control nurse, consultant microbiologist, environmental health officer and a CCDC (Consultant in Communicable Diseases Control) (Abertawe Bro Morgannwg University Health Board et al., 2013). The Wales outbreak team constituted these key professionals.

Put together a case definition

The required public health action depends on the case definition. According to Stanton et al., (2015) there are some criteria that was used to identify a

measles case. For example, laboratory tests results, place and time of illness and symptoms of the disease. The criteria was used in identifying cases of a measles outbreak in Wales. The categories of case definition included confirmed (clinical signs have been confirmed by laboratory tests as caused by organisms), probable (typical clinical signs that have not been confirmed by tests) or possible (fewer medical symptoms) (Abertawe Bro Morgannwg University Health Board et al., 2013). At first, OCT followed a strict case definition where clinical symptoms had to be tested in a laboratory to confirm measles infection. However, OCT later changed the case definition to probable incidences that had some contacts with confirmed patients because it was obvious the illness was measles.

How other cases were found

Active case search entails a plan to find cases in the community with the aim of implementing control measures. The goal is to come up with enough cases needed in the analysis using case definition. Also, it helps to provide a better insight into the extent of the outbreak (Bonita et al., 2006). The cases in Wales' outbreak were found through health care workers, local authorities and General Practitioners. Additionally, media was essential to alert members of the public. At first, the General Practitioners notified the Health Protection Team about the diagnosed cases through the telephone. The received information was then added to the Welsh Heath data. Finally, the patients were called and cross-examined about the history (Abertawe Bro Morgannwg University Health Board et al., 2013).

Questionnaires were used in data collection. Some of the questions asked included identifying data (telephone numbers, addresses, and names),

clinical signs with a verbal history of MMR vaccination and onset dates and demographic data (school, occupation, gender, and age). The travel history and epidemiological links were taken from measles patients. A patient was then categorized as a probable, possible or confirmed case concerning information provided during the interview. Consequently, there were 432 measles cases that were confirmed by the laboratory test, 1177 probable and 1202 possible cases.

The Health Protection Team staff in both West and Mid Wales offices (Carmarthen and Swansea) carried out local monitoring of the notified cases. The team was reinforced by the Central Health Protection Division that included Communicable Disease Surveillance based in Cardiff. The two agencies conducted wider surveillance of both confirmed and notified cases. The situation update on reported outbreak cases was prepared every day. These updates were then distributed to SRT (Senior Response Team) members. The headline figures were also made available to the Government of Wales. Additionally, the information was used during press releases every Thursday and Tuesday. The latest statistics on numbers of confirmed incidences broken down by area and age group were published to the members of the public every Thursday and Tuesday so as to concur with the press release (Abertawe Bro Morgannwg University Health Board et al., 2013).).

Measles is a highly infectious illness. The disease can be transmitted either through the air by way of coughs and sneezes droplets or through contact with an infected person. Additionally, measles is among the known acute viral diseases. Examples of symptoms of the illness include generalized

weakness, fever cough, rash, cold-like symptoms, fatigue, distinctive red-brown rash and conjunctivitis (Donovan & Bedford, 2013). According to Wales News, (2014) complications associated with measles are otitis media (9% of cases), convulsions (0. 5%), diarrhea (8%) and pneumonia (1%). The fatality of these complications is dependent on the age of a patient. It is known to be higher in kids who are below one year of age and lower in children aged between one and nine years (Whalen & McKay, 2013).

One major significance of researching an outbreak is to prevent and control further sickness according to (Cutts et al., 2013). The extent and urgency of public health implication of measles outbreak in Wales required the OCT to implement immediate interventions in controlling the epidemic. Examples of such interventions included letters to parents and health professionals, identifying unimmunized and vulnerable cases, managing affected persons, liaising with social media and press and organizing school immunization programs.

Describe cases and the sort of outbreak

Cases are described by person, place and time after data has been collected. The analysis of data based on place can help in establishing the origin of infection and determining places that are highly affected by the outbreak (Pegorie et al., 2012). According to Wales OCT, Swansea had the highest number of measles cases (650), followed by Neath Port Talbot (232) and other areas such as Ceredigion, Bridgend, Powys, Pembrokeshire, and Carmarthenshire recorded smaller number of measles notifications.

Analyzing the data by person helped in identifying cases at risk. Key aspects of the population that were considered includes gender, occupation, and age (Wales Politics, 2013). Furthermore, the report suggested that infection rate was higher in children than adults. However, the rates and severity of the infection are almost the same for both male and female patients.

Putting together a hypothesis

Understanding the hypothesis of the study helps individuals to minimize infection rates. According to Sugerman et al., (2010) the only way to prevent measles is by administering full MMR vaccine dose to individuals. Thus, considering the relatively low state of immunity among children in Wales, it can be concluded that the infection was measles and its source was an outing camp in South West of UK. Finally, the disease was spread among children because most of them were unvaccinated with MMR.

Test the hypothesis

Testing hypothesis constitutes application of analytical epidemiology. The main one entails case-control study whereby an assessment is made between control (persons who are not exposed to measles) and cases (people who already have measles) to determine the odd ratio (Stanton et al., 2015). However, testing of the hypothesis was not carried out in Wales because all the gathered data revealed measles infection and its source was also known.

Other information to confirm hypothesis

In the case of Wales' measles outbreak, saliva samples of patients were sent to World Health Organization (WHO) laboratory in UK capital, London.

However, in situations where saliva samples lacked then hypothesis were

confirmed using conditions available in places where the disease was widespread.

Control measures to prevent future outbreak

The primary technique is to ensure children have received MMR dose according to WHO requirements. Additionally, parents must be encouraged to immunize their kids at the appropriate age. On the other hand, the government has the responsibility to increase public awareness about the significance of MMR vaccination to children (Abertawe Bro Morgannwg University Health Board et al., 2013).

DISCUSSION AND CONCLUSION

The Health Protection Act of 2010 states that measles condition is notifiable in England (Vivancos et al., 2013). The main aim of MMR uptake is to provide vaccination to nearly all the children in the country with at least two doses of MMR. The recommended ages for administering the vaccine doses are 12-13 months and between 3-4 years. The uptake target level of MMR vaccine has enough capacity to prevent transmission of measles in a community with few infected individuals. MMR vaccine is given to help reduce transmission of measles and also to protect people with the weak immune system who cannot be immunized. The WHO has a goal to eradicate spreading of measles by 2018 (World Health Organization, 2009). The response from multi-agencies was determined to be efficient in controlling the measles outbreak. During the epidemic period, a total of 77, 805 vaccines were administered out of which 21, 493 was given to persons aged between 10 and 18 years of age (Abertawe Bro Morgannwg University Health Board et al., 2013).

A short inquiry into measles outbreak was conducted by Health and Social Committee at the National Assembly for Wales. The committee highlighted areas where further action was required in the management of the epidemic. These included a renewed focus on the 30, 000 children aged between 18 and 30 years who were not vaccinated during the outbreak. Moreover, there was further evaluation of the communication methods used to reach parents, young people and children (Abertawe Bro Morgannwg University Health Board et al., 2013).

LESSONS LEARNED AND RECOMMENDATIONS

Foremost, the most reliable means of protecting people from measles virus is through the administration of MMR vaccine. Abertawe Bro Morgannwg University Health Board et al., 2013 confirms that outbreak of measles can be prevented if a community has higher immunity levels. Secondly, disease outbreaks have significant health impacts. These includes high costs of medications and difficulties in controlling the spreading of the infection. Therefore, the government and all other stakeholders in the health department should put in place every effort to prevent future outbreaksz. An outbreak control team should be formed to put measures in place that will curb a future outbreak of disease.