



**EFFORTS TOWARDS RABIES AWARENESS IN MAKURDI, BENUE STATE  
NIGERIA: A PUBLIC LECTURE ON ANNUAL WORLD RABIES DAY  
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**Summary**

Rabies is a disease that is associated with very high case fatality rate. The disease is however, preventable by vaccination. World rabies day (WRD) inaugurated on September 8<sup>th</sup> 2007 by the World Health Organization is aimed at creating awareness among the public as a major step in the control of the disease. The event is now marked on the 28<sup>th</sup> September annually. Rabies is endemic in Nigeria among the domestic dogs and human exposure is common. From the year of inauguration of WRD there have not been much activities to create awareness in Makurdi Nigeria. Events planned and executed for rabies education and awareness should include visual arts, sports, public lectures, vaccination campaign dog parade, walks, school children education, workshops and distribution of WRD logo, branded souvenirs such as badges, note books and gift bags. The print media including local newspapers and educational leaflets and posters are also utilized. The electronic media especially the local radio stations are also involved through daily jingles aired during the WRD period. This paper looks at the efforts made for reaching the public with the message of rabies prevention and control in Makurdi by the Nigerian Veterinary Medical Association Benue State Chapter during the 10<sup>th</sup> world rabies day on September 28<sup>th</sup> 2016. The public lecture on the day is also presented in this article.

**Keywords:** Rabies, Public Education, Makurdi, World Rabies Day



## Introduction

The declaration of an annual world rabies day September 28 is intended to raise public awareness on the severity of the disease and means of preventing and controlling the disease. This year's World Rabies Day is the first observance of the campaign in Benue State. The theme for this year is: educate vaccinate and eradicate. This could not have come at a better time as the Benue State government needs to urgently adopt a rabies control strategy for implementation through the ministry of Agriculture and Natural resources and the ministry of Health and Human services which have key responsibilities in the control and eradication of rabies, if the disease is to be eliminated in the state.

Girolama Fracastoro, a Verona born Italian doctor had observed the devastating effect of rabies virus which connects the saliva of infected animals with this disease in human beings (victims). He gave the name rabies which in Latin means 'to rage' to this incurable (but preventable) disease. Ancient texts describe the existence of this disease in Mesopotamia or Babylonian empire and from the locations, the virus is thought to have spread to Europe and then following patterns of human colonization, to Africa.(3) An essential 55,000 cases of rabies are reported yearly mainly in underdeveloped areas of Africa and Asia.

Commonest sources of infection are from infected dogs. Following Dr. Fracastoro's report on this clinical finding, it took Louis Pasteur, a chemist turned microbiologist about 300 years to discover the rabies vaccine. Prior to this discovery, animals and human beings suspected of having symptoms attributed to rabies were shot, suffocated or poisoned. This prompted a firm legislation in 1810 in France to stop the murder of innocent people (3).

## Site of the interventions/campaigns

Makurdi is a town located in the north central Nigeria. It is host to many educational institutions including the Federal University of Agriculture Makurdi. It has a College of Veterinary Medicine and Veterinary services are obtainable from the various Departments in the College. There is also a Veterinary Teaching Hospital owned by the University and Veterinary Clinic owned by Benue State in the town. Several professionals were involved in the WRD events for this year. The Three Day events were organized as follows:

1. About One Hundred very enthusiastic persons including Veterinary and non Veterinary staff and students participated in the walk for rabies round the major streets in Makurdi town. This kick started the WRD three day events. WRD logo branded T-shirts were distributed free to all who showed up and registered. The work targeted densely populated areas including major streets where educational materials were distributed to commuters and passers-by. The educational materials included flyers containing information on frequently asked questions about rabies and rabies prevention posters.
2. Radio talk on rabies presented by rabies experts in the College of Veterinary Medicine and Ministry of Agriculture and Natural resources Makurdi. Important and relevant topics such as aetiology, prevention and control of rabies were tackled and it was a good forum for giving information on frequently asked questions on rabies to the general public.



3. Free dogs vaccination campaign was held at IBB Square using anti-rabies vaccines donated by the State Ministry of Agriculture and Natural resources and the first two hundred dogs to be presented for vaccination received free shots of the vaccines.
4. The grand finale was a public lecture on rabies and dogs bites presented by a rabies expert from the Department of the Veterinary Public Health of the University. Important and relevant topics such as the problems of rabies, the disease transmission and symptoms in human, public awareness, current rabies status in Makurdi Benue state in particular and Nigeria in general, rabies control efforts, reasons for failure of rabies control programme and recommendations for control and eradication of rabies in dogs and cats.

#### *The Disease, Transmission and Symptoms in Humans*

The disease rabies is a viral encephalitis transmitted from animal to animal and from animal to man through infective saliva. The virus is introduced into muscle and nerve ending-rich tissues following animal bite. It then penetrates into nerve cells where it replicates and progressively travels through the spinal cord to the brain causing hydrophobia, hallucinations, aggressive behavior and paralysis, eventually leading to coma and death. The virus also spreads to salivary glands and the skin, cornea, nasal and intestinal mucosa and other organs. The disease persists especially in developing countries in Africa, in South and South-East Asia, and to a lesser extent Latin America. (2). The agent of rabies is a virus. It is the most fatal virus in the world, a pathogen that kills nearly 100 percent of its host in most species, including humans. After a

bite, the rabies virus binds quickly into the peripheral nerves but then makes its course with almost impossible slowness, usually requiring at least three weeks and often as long as three months to arrive at and penetrate the brain. On the occasion of a full year, or even five years, can elapse before the onset of symptoms (2). During this time the wound will heal over and the victim may forget about his scrape with a snarling beast. But healed or no, as the virus enters the brain, the wound will usually seem to return, as if by magic, with some old sensation occurring at the site. This sensation can take many forms: stabbing pains, or numbness; burning, or unnatural cold; tingling, or itching, or even a tremor. At roughly the same time, these soon-to-be-doomed patient typically display general signs of influenza, with a fever and perhaps a sore throat or some mild nausea, insomnia, fatigue. All this is merely prelude to illness itself, where most notable symptom in humans, unique, as far as physicians know, to rabies among all diseases, is a terrifying condition called hydrophobia. As the term suggests, hydrophobia is a fear of water. Present the hydrophobic patient with a cup of water and, desperately though he wants to drink it, his entire body rebels against the consummation of this act. Revers spike high during the final phase of the disease. The mouth salivates profusely. Tears stream from the eyes. Goose bumps break out on the skin. Cries of agony, as expressed through a spasming throat, can produce the impression of an almost animal bark. In the throes of their convulsions, patients have been known to bite. They also hallucinate.

Not uncommonly, male patients succumb to an even more lurid sort of abandon. The virus action on the limbic system of the brain can cause them to exhibit hypersexual behavior: increased desire, involuntary erections and even orgasms, sometimes occurring at a rate of once per



hour. Rabies indeed is the world's most diabolical virus (2).

#### *Public Awareness*

Public awareness is a viable relatively inexpensive and highly effective tool for rabies prevention. It is on this rabies prevention is hinged. The message is to avoid dog bites, apply appropriate first aid and seek medical attention in case of exposure. Many dogs are not properly cared for, are unvaccinated against rabies and allowed to roam freely, leading to frequent dog bites and potential exposure to the disease. Rabies is widely distributed across the globe, with only a few countries (mainly islands and peninsulas) being free of the disease. Rabies is a neglected disease of poor and vulnerable communities. The major reason why this tragedy is going on today is that rabies is a disease which often affects people where death are not heard about and not accounted for. This in turn, prevents setting up measure that would avert human disease occurrence through proper management of suspect rabid animal bites and conduct activities for the control and ultimate elimination of dog bites. It also prevents mobilizing resources from the international community to the goal of human and dog rabies elimination. Canine rabies is predominant in most of the developing world where the greater burden of human rabies also falls. It is estimated that approximately 55,000 to 70,000 people die from dog-mediated rabies annually. Human rabies deaths following contact with wildlife species including bats are rare compared to those caused by dog-transmitted rabies which mostly occur in Asia and Africa (9). Man cannot completely avoid contact with animals and for many, the benefit of having pets far outweigh their fear of zoonotic infections. Dogs are reservoir of many human infections including rabies, brucellosis, campylobacteriosis, cryptosporidiosis, sporotrichosis, dermatophytosis,

leptospirosis, salmonellosis etc. Depending on the disease, transmission may be through bites and scratches or the faecal-oral route. It is therefore the duty of the veterinarians, medical practitioners and public health personnel to provide the necessary education for safe handling of animals to minimize the risk of zoonotic disease transmission. The control of zoonotic diseases requires both medical and veterinary interventions; the emerging interdisciplinary field of conservation medicine and environmental sciences is largely concerned with zoonoses. The emergence or reemergence of zoonotic diseases poses serious threat to public health on a global scale; therefore international cooperation is required for meaningful control.

The close association between humans and domesticated dogs began at least 12,000 years ago. Since then, people have intimately involved in domesticating wild dog into hunter, guard and companion. However, the domesticated dog retains many of its wild instincts, including behaviours that all too often lead to human attacks. This risk has always been present. Only now, however, are we beginning to gain a full understanding of the impact of dog bites on populations (10).

Bites and scratches from dogs can expose human to rabies through contaminated saliva, secretion or blood. So all dog bites or scratches should be taken seriously and immediate medical attention sought. Most human deaths from rabies occur in tropical resource - limited countries including Nigeria. Data on hydrophobia collected from government and private human hospitals in Makurdi indicated, there were 21 cases of rabies in humans in 2015. The occurrence of 21 cases of death from rabies in Makurdi in one year alone is very alarming. The study showed that hydrophobia is under reported in Makurdi and its suburbs and is a silent killer in the area. Information on the status of rabies in humans provides a basis



for professional advice to people and their interaction with dogs. It also provides information on the public health and economic burden of the disease among the populace and the information gathered could form a useful basis for effective planning of rabies control and prevention efforts as well as policy promulgation/enforcement in the area. Rabies was considered serious enough that WHO designated September 8, 2007 as the first ever world rabies day. The event is now marked on 28 September annually (4). Presently, rabies is endemic in the canine population in the country and poses a serious threat to public health. It is estimated that about 10,000 persons are exposed to rabies each year in Nigeria from dog bites. Transmission occurs mainly through adequate contact of virus in saliva with an open wound. Some authors have reported an average of 7.4 human mortalities annually in Nigeria between 1987 and 1995. However it is believed that rabies is grossly under reported in Nigeria (4). Most African and Asian countries report the presence of human and dog rabies in all or large part of their territories. Africa and Asia are bearing most of the global public health burden of rabies with most human death due to rabies originating from there.

*Current Rabies Status in Makurdi, Benue State, Nigeria*

1. Yearly distribution by state capitals and cities of cases of rabies examined at NVRI 1983-1992 showed a total of 20 confirmed cases (1.4%) in Makurdi. Makurdi ranked fourth after Jos and surrounding, Ilorin and Kaduna.
2. It is estimated that in Makurdi, state capital of Benue State there are 3,322 street dogs and 7,500 owned dogs which are not always restricted.(1).
3. Dog bites that result in injuries occur frequently, but how frequently dog bite injuries necessitate medical attention at

a hospital or hospital admission is unknown.

4. 89 human cases of dog bites were handled between 2011 and 2015 in Makurdi higher than 37 reported from 2004 to 2008 and 28 from 2006 to 2010.
5. Dog bite cases are under reported in Makurdi. If cases are not reported, the problem will continue to remain neglected and policy will not be made towards its control and prevention.
6. Many people do not report dog bites because they do not understand the risk involved. Education is a very viable tool for dog bite and rabies prevention especially for high risk group like children.
7. More knowledge is needed through a combination of enhanced and coordinated dog bite reporting systems, expanded population-based surveys and implementation and evaluation of preventive measures.
8. In 2015, twenty-one cases of hydrophobia (11males, 10females) were recorded in Makurdi Benue State Nigeria. In the same year, a total of 33 dog bite injuries were reported among age group 1-5 years to age group greater than 21 years. Dog bites were on the increase from 2011 to 2015 resulting in 89 bites for the period with 57male and 32female victims.
9. The occurrence of 21 cases of rabies in human in Makurdi in one year alone is very alarming and shows that rabies is a silent killer even though it is under reported.
10. Hydrophobia and dog bite injuries appear to be commonly presented at the medical hospitals in Makurdi and this call for intensification of preventive measures.
11. The percentage rabies vaccination required to prevent the disease in human population is far from being reached as of 10,822 dogs in Makurdi



only 23.90% have rabies immunization which is less than 70-80% required by the WHO. Only 2586 dogs were vaccinated against rabies from 2011 to 2015. (1).

#### *Current Rabies Status in Nigeria*

1. A case of rabies is considered to be an epidemic because of the violent way in which the patient dies. The Federal Ministry of Health (FMOH) in collaboration with the Federal Ministries of Agriculture and Information harness knowledge to control this disease in a more effective and efficient manner nationwide. As a result the FMOH works with the National Veterinary Research Institute (NVRI), Vom, Plateau State and with Centers for Disease Control and Prevention (CDC), Abuja Nigeria and Atlanta Georgia, USA.
2. Rabies control through Immunization program has crashed woefully and consequently the rabies situation has become chaotic and confounding.
3. Dog population in Nigeria is currently estimated at 8 million. In the last 20 years of research and follow ups on rabies and associated problems only 10% of the dog population received anti-rabies immunization. The low number of Nigerian dogs immunized (10% instead of 70- 80%) leaves the country with an abundance of epizootic siblings for rabies outbreaks.
4. Evidence on the trend of rabies cases recorded (1985- 1991) confirmed 40%-60% increase in rabies positive cases for every decade in Nigeria.
5. Some studies of prevalence of rabies antigens in the brain and saliva of apparently healthy dogs slaughtered for human consumption in Nigeria revealed a 28% prevalence of rabies antigen in the consumed dogs in North-West;31% from North-East and 24% from North-Central regions of Nigeria. Similarly 6%-

8% of the dogs had rabies antigen in their saliva at the point of slaughter.

6. Rabies is thus a problem in Nigeria such that the apparently healthy dogs slaughtered for human consumption harbor the viral antigen in the brain and saliva. This is an obvious public health risk and may have serious implication.

#### *Rabies Control Efforts*

There are only a few well-coordinated human and dog rabies control projects under way in Africa. Rabies is under control in Morocco and Tunisia. In sub-Saharan Africa, South Africa and Tanzania are working to eliminate rabies from pilot areas with the support of the Gates Foundation and WHO. A project for dog rabies elimination in Djamena, Chad benefits from the support of the Swiss Public Health and Tropical Institute and the Optimus Foundation. Two networks of African rabies experts are meeting on a regular basis: one for South Eastern African countries (South Eastern Rabies Group: SEARG) and one for francophone western African countries (African Rabies Expert Bureau: Afro-Reb) (5).

Rabies is vaccine preventable in domestic animals including dogs and cats and also in people and it satisfies all of the World Health Organization's requirements for diseases that are considered priority for control. In spite of this and the WHO estimate of 70,000 human deaths per year, with a disproportionate number of these children, control of rabies is considered low priority by most national health agencies. Africa follows Asia as the second highest continent impacted by rabies with 24,000 cases registered per year. This number has been estimated to be under reported by as much as a factor of six (9).

#### *Reasons for Failure of Rabies Control Program*

The failure of control programs may be attributed to inappropriate and ineffective



control strategies such as dog culling, lack of domestic dog vaccination programmes, lack of relevant public education effort and insufficient funding. In addition, there are many challenges including epidemiological, operational, socio-cultural and legal [9].

#### Epidemiological

- \* Number of dogs unknown
- \* Weak surveillance and data collection

#### Operational

- \* Insufficient veterinary and human medical resources and infrastructure
- \* Lack of laboratory diagnostic capacity
- \* Insufficient knowledge of dog ecology
- \* Lack of human and veterinary professional personnel
- \* Lack of interaction and communication between human and veterinary practitioners, researchers, academicians, public private sectors
- \* Lack of human and animal treatment facilities

#### Socio-cultural

- \* Religious beliefs
- \* Traditional healing and healer
- \* Perception of disease acquisition and transmission
- \* Wound management perception of vaccination

#### Legal

- \* Lack of clear and applicable laws and regulation
- \* Lack of enforcement of those laws and regulations that have been legislated.

Successful rabies control programmes are dependent on sustained local political commitment and finances for dog rabies control programmes, strengthened surveillance data, implementation of new diagnostic technologies, understanding of local dog population dynamics, strengthened professional cooperation and adjunct medical coordination (which is a "one health, one medicine" concept). Since rabies is 100% vaccine preventable, the FMOH's policy is to offer yearly budget recommendation for anti-rabies vaccines to

be procured by the federal government for equitable distribution nationwide. The FMOH is committed to ensuring quality public health services in rabies elimination in Nigeria in pursuit of the millennium development goals of the United Nations. Following the incidence of rabies epidemic in Cross River State, Nigeria in 2012, the Honourable Minister of Health has mandated expert team to offer national capacity building to mitigate such occurrence.

#### **Recommendations**

1. Dogs are the source of the vast majority (>98%) of human rabies deaths. Therefore, the control and eradication of rabies infection should be made top most priority.
2. The need for political commitment and action of the Government to consider rabies as one of the priorities and an important emerging and re-emergent disease and to provide resource for human and animal health services cannot be over emphasized. It is not the number of people killed by this disease that is the matter but the gruesome way the disease kills its victim and of course the disease is 100% preventable. It is pertinent to acknowledge the socio-economic implications of rabies and its impact to meeting the Millennium Development Goals.
3. National Governments are urged to promptly attend to the immediate supply of human anti-rabies vaccines and immune globulins for exposure treatment and management of human in hospitals in at-risk communities. Nigeria should carry out dog population census to guide dog vaccination in the country.
4. There is a need for improved public education on rabies in major



Nigerian Languages and within indigenous context, using graduation of Nigerian languages as the core foundation of the network, with a view of dispelling myths about the disease in both rural and urban communities.

5. Tending modules should be delivered to enhance knowledge and interaction between specialists in schools of medicine, veterinary medicine, nursing, Health technology and the humanities in Nigeria.
6. Schools and colleges of medicine and veterinary medicine in Nigeria should be enabled to serve as diagnostic laboratories for rabies surveillance and confirmation in collaboration with the National Zoonoses Center in Nigeria.
7. Mandatory vaccination of dogs against rabies in the area.
8. Education of the public on proper keeping of dogs, prevention of dogs bites and rabies and correct treatment of dog bite wounds.
9. Prompt reporting of stray dogs to the appropriate authorities
10. Avoidance of indiscriminate dumping of garbage so that dogs do not feed on them.
11. Community participation should be encouraged, particularly in reporting of cases of dog bite and rabies.
12. Establishment of rabies diagnostic laboratory in the government and private hospitals for prompt and early diagnosis and treatment of rabies suspects.

### Conclusion

Successful rabies control programmes are dependent on sustained local political commitment, of local dog population dynamics, strengthened professional cooperation and adjunct medical

coordination (which is a "one health, one medicine concept"). Since rabies is 100% vaccine preventable, the FMOH's policy is to offer yearly budget recommendation for anti-rabies vaccines to be procured by the federal government for equitable distribution nationwide. The FMOH is committed to ensuring quality public health services in rabies elimination in Nigeria in pursuit of the millennium development goals of the United Nations. Following the incidence of rabies epidemic in Cross River State, Nigeria in 2012, the Honourable Minister of Health has mandated expert team to offer national capacity building to mitigate such occurrence. Rabies and dog bites are rampant in Makurdi and calls for more serious efforts by the State Ministries of Agriculture and Natural resources and Ministry of Health and Human services to control the neglected zoonosis.

### References

1. Akombo, P.M, Umoh, J.U, Ajogi, I. and Bello, M. (2009). Dog ecology and epidemiological studies of canine rabies in Makurdi, Benue State. M.Sc Thesis, Ahmadu Bello University, Zaria.
2. Bill Wasik and Monica Murphy (2012), Rabid: A Cultural History of the World's Most Diabolical Virus. - Penguin Books New York, New York 10014, USA, 275 pages.
3. Christian Onyebuchi Chukwu (2013), Rabies: Under-reported disease in West Africa. Can we address the challenge? *Epizootiology and Animal Health in West Africa, Volume 9(2) July - December, 2013, pp. 71-72.*
4. Dzakari, A.A, Gareida, A.D and Umoh, J.U (2011). World Rabies Day: Efforts Towards Rabies Awareness in Zaria, Nigeria. *Nigeria Veterinary Journal, Vol. 32(2) 2011:133-136.*
5. Francois-X, Meslin (2013). Human and Dog rabies control: regional and global Perspectives. *Epizootiology and Animal Health in West Africa, Vol.9(2013):2-4.*
6. Ogunkoya Albert B. , Samuel W. Audu, F.P, Mshelbwala, Y.J, Ataman, A.M. , Ehimiyejin, Modupe O.V, Osinubi, Ahmed Garba, E.O Abidoye and I.I Onoja. (2013). Problems of Rabies in Nigeria: a review. *Epizootology and Animal Health in West Africa, Volume 9(2) July - December, 2013, pp. 86-105.*
7. Okoh, A.E.J (2007). Rabies in Nigeria: Issues and Challenges. 6th Inaugural lecture, University of Agriculture Makurdi.
8. Sanni, A.O, Adeniyi, A, Moses, K.S, Yennan, O.B, Adegbin, SO.S, Baduru, Y, Obadegesin and S.B. Oladejo. Improving rabies control in West Africa: Perspectives from the Nigerian Federal Ministry of Health. *Epizootology and Animal Health in West Africa, Volume 9(2) July - December, 2013 pp. 73-80.*
9. Harold, L. Russel. (2013). Emergence of Rabies in West Africa, Strategic Partnership to improve the surveillance and control of a neglected zoonosis. *Epizootology and Animal Health in West Africa Vol.9 (2013): 5-7.*
10. Sacks J.J, Kresnow M, and Houston B.L (1996). Dog bites: How big is the problem? *Inj Prev, Vol.2(1996): 52-54.*
11. Tekkilshaya S, Philip A. Okewole, Stephen P. Ekong, Peter Ize Kumbish, David Shamaki and Mohammed S. Ahmed. (2013). Control of rabies and rabies-related viruses in Nigeria: Perspectives from the National Veterinary Research Institute, Vom, Nigeria. *Epizootology and Animal Health in West Africa, Volume 9(2) July - December, 2013, pp. 59-69.*