

1st REPORT OF MIZORAM STATE VETERINARY COUNCIL



**NEAR DIRECTORATE OF ANIMAL HUSBANDRY
AND VETERINARY DEPARTMENT**

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1st Report of
Mizoram State Veterinary Council

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PRESIDENT'S MESSAGE



Sincere greetings with a wave to all registered Veterinarians of Mizoram State Veterinary Council.

The first and only of its kind, the First Report of Mizoram State Veterinary Council is now published and released purely through the dint of the Council members and especially members who are in charge, I highly appreciate their deep dedication for the works done. This report book will certainly breeds more good momentum within the family of Veterinarians in Mizoram, who are working in various fields and shall certainly be good and valuable record book in time to come as well. Let us not allow to fade the shine of this shiny profession, which had touched the hearts and minds of Mizo since time immemorial. Let this kind of reports be the source of exchange of rich knowledge among us, now and in time to come ahead of us. While preparing this report book, I can't help reminiscing Senior members who matters in moulding the council into being as of now.

This noble profession members and the Department of A.H & Veterinary, as a whole, do reasonably well in their performance in the midst of many ups and downs of our time and in confronting problems which you and me do not create in the interest of us all. I request all members to give thoughtful thought and search to enrich richly our profession, wherever you are and at whatever time. Let us embrace profoundly the purpose and principle of our oath and ethics.

I say very big thank you to all who contributed valuable articles in this report book.

A handwritten signature in blue ink, appearing to read 'C. Sangnghina'.

Dr. C. SANGNGHINA
PRESIDENT

MIZORAM STATE VETERINARY COUNCIL

MIZORAM STATE VETERINARY COUNCIL

A statutory Body established under
Indian Veterinary Council Act, 1984

ENACTMENT OF THE INDIAN VETERINARY COUNCIL ACT, 1984

The Government of India, Ministry of Agriculture on the recommendations made by the National Commission of Agriculture, during the early part of the sixth plan period introduced a bill in Parliament - entitled 'The Indian Veterinary Council Bill' The Indian Veterinary Council Act, was enacted in 1984, which envisaged establishment of the Veterinary Council of India at the Centre and State Veterinary Councils in such states which had adopted the Indian Veterinary Council Act and in all Union Territories. The Indian Veterinary Council Act received the assent of the President on 18th August, 1984 and thereafter published for general information by Minister of Law, Justice and Company Affairs (Legislative Department).

ESTABLISHMENT OF STATE VETERINARY COUNCIL

In exercise of the powers conferred by sub-section (3) of section I of the Indian Veterinary Council Act, 1984 (52 of 1984), the Central Government appoints the first date of June, 1985 as the date which the provisions of the said Act shall come into force in the Union Territories like Mizoram. This appointment of date is issued by the Government of India, Ministry of Agriculture and Rural Development, Department of Agri.& Co-op through notification vide letter No. 23-116/84LDT (LHS) dated the 27th June, 1985.

Following the Notification issued by the Government of India, Mizoram Government (U.T) automatically adopted the Act and formed Mizoram State Veterinary Council on Adhoc basis in 1986. The State Veterinary Council was run on Adhoc basis by the Animal Husbandry and Veterinary Department with the Director as acting President, Joint Director (A) as Registrar/ Secretary. Following are the members of the Council.

1. Dr. Zolawma, Elected
2. Dr. L. Siamliana, Elected
3. Dr. C. Sangnghina, Elected
4. Dr. Daniel Chianghnuna, Elected
5. Dr. V. Liansanga, Nominated
6. Dr. L.S. Hrahsel, Nominated
7. Dr. H. Chalruala, Nominated.

The Adhoc body processed formation of State Veterinary Council with framing draft rules in line with the Veterinary Council of India Act and obtained assent of the Governor, Government of Mizoram in 1991.

Soon after the Notification of Council rules was issued by Government of Mizoram, Mizoram State Veterinary Council was established in 1991, under section 32 of the Act.

COMPOSITION OF MIZORAM STATE VETERINARY COUNCIL

As per section 32 of Indian Veterinary Council Act, 1984, Mizoram State Veterinary Council consists of the following members.

1. Four members elected from among themselves by Veterinary Practitioners registered in the State Veterinary Registers.
2. The head of Veterinary Institutions, if any in the State-like Dean, College of Veterinary Science & Animal Husbandry, Selesih ex-officio.
3. Three members nominated by the State Government from Veterinarians enrolled in the State Veterinary Practitioners Register.
4. The Director of Veterinary Services of the State ex-officio.
5. One member to be nominated by the State Veterinary Association, if any.
6. Registrar of the State Veterinary Council ex-officio.

THE SALIENT FEATURES AND OBJECTIVES

- (i) Maintain the Indian / State Veterinary Practitioners register which shall contain the names of all persons who possessed the recognized veterinary qualification and who are for the time being enrolled on a State Veterinary Register of the State to which Indian Veterinary Council Act extends.
- (ii) Lay down the standards of professional conduct, etiquette and code of ethics to be observed by veterinary practitioners.
- (iii) Only registered Veterinarian in any State Veterinary Council would be entitled to practice veterinary medicine and to recover fees and charges in respect of medicaments and other appliances.
- (iv) Only registered Veterinary Practitioners who's names are borne on Indian/State Veterinary Practitioners register shall have the right to hold office as Veterinary Physician, Surgeon or such similar position (by whatever name called),

authenticate health certificates and give evidence under Indian Evidence Act, 1872, on matters relating Veterinary Medicine. Veterinary practice by unregistered persons would be prohibited except minor Veterinary Services, under supervision of a registered Veterinary practitioner, by 'specified' persons as per the discretion of State Government. (See section 30 of IVC Act)

THE COUNCIL IS BODY CORPORATE

As per section 35 of the Indian Veterinary Council Act, 1984, the Mizoram State Veterinary Council is a body corporate by the names aforesaid, having perpetual succession and a common Seal, with power to acquire, hold and disposed property, both movable and immovable to contract and shall by the same name sue or be sued.

THE INSIGNIA OF MIZORAM STATE VETERINARY COUNCIL

The Council in its meeting during 1991 decided to have its own insignia. The detail of which is as below:-

The State Council adopt art of insignia like Sculpture of bull from the Veterinary Council of India who by succession drew its insignia from the Ashoka'n era which project the veterinary profession of India in its 'best heritage'. Sculpture of Snakes engulf by 'V' symbolized the Veterinary medicine. The text refers to one of the objectives of veterinary profession.

TERMS OF OFFICE

As per chapter VI of section 38 of sub-section (I) of Indian Veterinary Council Act, 1984, a member of the State Veterinary Council, other than an ex-officio member, shall hold office for a term of three years from the date of his election or nomination to the State Veterinary Council or until his successor has been duly elected or nominated, whichever is longer.

DISCIPLINE

As per chapter V of section 31 of IVC Act, 1984, the Council may, by regulations, specify standards of professional conduct and etiquette and code of ethics for Veterinary Practitioners

COUNCIL OFFICE

The Animal Husbandry & Veterinary Department, Mizoram constructed a Semi- R.C. C. two storeyed building at Khatla along the Khatla - Bungkawn

Vengthar Road for Council Office in the year 1990-1991. The Council Office was initially run by one Registrar - Dr. Zokhuma Joint Director retired with one assistant and peon lend by the Department. Dr. Zokhuma continued to hold the post of Registrar and during 1994 one Office Assistant by name Pu C. Thanzuala and one peon cum chowkidar by name Pu Lalhmingliana were appointed by the Council and approved by the Government of Mizoram. The Council in its meeting decided to construct new building as the existing building is found too small. Construction of Council building was started at a side adjacent to Veterinary Hospital building Khatla from the year 2002 with R.C.C structure by sliding Department land. The building is approachable from both Directorate A.H & Vety and Khatla Bungkaw Road. The new building though completed half way is occupied as Council Office from the year 2005, subjected to vertical extension to accommodate the Meeting / Conference Hall and Guests Room.

COUNCIL ACTIVITIES

1. Mandatory Activities

- 1) Regulate veterinary practice.
- 2) Registration of Veterinary Practitioners and issues the certificate of registration as per provision of section 24 of the I.V.C. Act, 1984 along with replica card/identity card.
- 3) Prepare State Veterinary Register as per the provisions of section 44(2) of Indian Veterinary Council Act, 1984.
- 4) Furnish copies of the State Veterinary Register to Veterinary Council of India as per provisions of section 23(4) of the Act.
- 5) Renewal of registration (as per provisions of Sec.52 of the Act.)
- 6) Removal of name from the Register (as per provision of section 52 & 49(1) of the Act.)
- 7) Transfer of Registration to other State Veterinary Council (as per provision of section 52 of the Act.)
- 8) Conduct Council election for formation of Council Board.
- 9) Issuing of Provisional registration of internees after successful completion of B.V.Sc. & A.H.
- 10) Council implement the standard professional conduct, Etiquette and code of Ethics for Veterinary Practitioners under provision of Indian Veterinary Council Act, 1984.

2. Other Activities

- 1) Submission of estimate for construction of State Vety Council Hall at Khatla amounting to Rs 2, 25,400/- on 22nd November, 1988.
- 2) Fill up the Post of Registrar MSVC and appointed Dr. Zokhuma on 1st September, 1994.
- 3) CVE Programme for Registered Veterinarians on Artificial Insemination in Pigs at Regional Pig Breeding Training Centre, Selesih.
- 4) FMD Vaccination Camp at Hmuifang Area in 21st January, 2010.
- 5) Seminar on “Rabies as a Public Health Issue” at I & PR Audi-torium on July, 2011.
- 6) Celebration of World Veterinary Day 2011.
- 7) Free Clinic Camp organised jointly by MSVC and AH &Vety at Thenzawl on 28th & 29th November, 2011.
- 8) Orientation Training cum Seminar for Para – Vets at Lunglei on 3rd May, 2012.
- 9) Celebration of World Veterinary Day 2012.
- 10) Free Clinic/Health Camp at Samtlang village on 1st June, 2012.
- 11) Orientation Training cum Seminar for Para- Vets at I & PR Auditorium on 9th August, 2012.
- 12) Observation of World Rabies Day on 28th September, 2012.
- 13) Free Animal Health Camp at Tachhip Village on 2nd November, 2012.
- 14) Celebration of World Veterinary Day 2013.
- 15) Celebration of World Zoonoses Day 2013 on 6th July, 2013.
- 16) World Egg Day on 11th October, 2013.
- 17) Vocational Award 2013 on 26th April, 2014.
- 18) Celebration of World Veterinary Day 2014
- 19) Observation of World Rabies Day 2014
- 20) Celebration of World Veterinary Day 2015
- 21) Observation of World Zoonoses Day 2015 (Essay Writing Competition)
(1st prize - Rs 10,000/-, 2nd Prize - Rs 5,000/-, 3rd Prize - Rs 3,000/-)

- 22) Issuing Quarterly Newsletter named 'News Notes'.
- 23) Brainstorming Session of Professional Efficiency Development held on 23rd October, 2015.
- 24) Sharing Knowledge of Stake Holders on 14th January, 2016.
- 25) Observation of World Zoonoses Day on 6th July, 2016.
- 26) Observation of World Rabies Day on 28th September, 2016.
- 27) Celebration of World Veterinary Day 2016.
- 28) Celebration of World Veterinary Day 2017.
- 29) Free Animal Health Camp at Tlungvel Village on 23rd August, 2017.
- 30) Free Animal Health Camp at Hnahlan on 5th April, 2018.
- 31) Sponsored 1st Mizoram Dog Sport organised by Hillside Event Management on 16th Dec, 2017.
- 32) Presentation of Certificate of Appreciation to Dr. Lalnuntluangi Hmar, Dr. K. Lalrintluanga and Dr. Jonathan Lalsiamthara on 14th December, 2017.
- 33) Cash Award Rs 30,000/- to Dr. Jonathan Lalsiamthara.
- 34) Celebration of World Veterinary Day 2018.
- 35) Sponsored Dog Show organised by Kennel Club, Aizawl on 14th January, 2018.
- 36) Field visit to KVK, Aizawl and A.H Farm Complex, Selesih on 26th July, 2018.
- 37) Field visit to Piglet Multiplication Farm, Thingsulthliah, District A.H & Vety Office, Serchhip and AH Farm complex, Thenzawl on 30th - 31st August, 2018.
- 38) Field visit to A.H Farm Complex, Thenzawl, Integrated Animal Husbandry and Veterinary Training Institute, Lungpuizawl, Lunglei and other establishments under Joint Director (SZ) Lunglei on 19th and 20th February, 2019.

THE STATE COUNCIL BODY

As per Mizoram State Veterinary Council Rules 1991, the Council body was formed through election and nomination of the member. The following are the past and present members of the State Veterinary Council- Elected, Nominated and Ex-officio:-

I. 1993- 1995



Dr. R. Kapthuama
Elected Member President



Dr. Daniel Chiangnuna
Elected



Dr. Lalsiamliana
Elected



Dr. Hmarkunga
Elected



Dr. C. Sangnghina
Elected



Dr. Zolawma
Nominated



Dr. L.S. Hrahsel
Nominated



Dr. L. B. Sailo
Nominated



Dr. R. Kapthuama
Director(ex-officio)

II. 1995-1997



Dr. R. Kapthuama
Elected Member President



Dr. Lalsiamliana
Elected



Dr. C. Sangnghina
Elected



Dr. Hmarkunga
Elected



Dr. Zolawma
Nominated



Dr. L.S. Hrahsel
Nominated



Dr. L. B. Sailo
Nominated



Dr. Daniel Chianghnuna
Nominated (MVA)



Dr. C. Lianmawia
Director (Ex-officio)

*“Good Veterinarians talk to animals.
Great Veterinarians hear them talk back”*

III. 1998 - 2001



Dr. R. Kapthuama
Elected Member President



Dr. C. Lalrintluanga
Elected



Dr. K. Rokhawla
Elected



Dr. Lalhmingthanga
Elected



Dr. L.S. Hrahsel
Nominated



Dr. Thanzuala
Nominated



Dr. Lalsiamliana
Nominated



Dr.C. Sangnghina
Nominated



Dr. C. Lianmawia
Director (Ex-officio)



Dr. G. P. Patgiri
Dean (Ex-officio)

IV. 2002 - 2005



Dr. R. Kapthuama
Elected Member President



Dr. Saihlira
Elected



Dr. C. Lalrintluanga
Elected



Dr. K. Rokhawla
Elected



Dr. Saingura Sailo
Nominated



Dr. Lalsiamliana
Nominated



Dr. K.C. Roduhawma
Nominated



Dr. D.K. Deka
Dean (Ex-officio)

“Personally, I have always felt that the best doctor in the world is the Veterinarian. He can’t ask his patients what is the matter...he’s just got to know”

- Will Rogers

V. 2005 - 2008 / 2009



Dr. R. Kapthuama
Elected Member President



Dr. C. Lalrintluanga
Elected



Dr. Saihlira
Elected



Dr. K. C. Roduhawma
Elected



Dr. L. S. Hrahsel
Nominated



Dr. C. Lianmawia
Nominated



Dr. Saingura Sailo
Nominated



Dr. K. Rokhawla
Nominated (MVA)



Dr. C. Sangnghina
Director (ex-officio)



Dr. Gaj Raj Singh
Dean (Ex-officio)

VI. 2009 - 2012



Dr. R. Kapthuama
Elected Member President



Dr. Hmarkunga
Elected



Dr. Lalremliana
Elected



Dr. Lalhmingthanga
Elected



Dr. L.S. Hrahsel
Nominated



Dr. C. Lianmawia
Nominated



Dr. Saingura Sailo
Nominated



Dr. LB. Sailo
Director (Ex-officio)



Dr. Gaj Raj Singh
Dean (Ex-officio)

“Never believe that animals suffer less than humans. Pain is the same for them that it is for us. Even worse, because they cannot help themselves”

- Louis J. Camuti

VII. 2012 - 2015



Dr. R. Kapthuama
Elected Member President



Dr. Jasper Rongura Sailo
Elected



Dr. Lalnunhlma Ralte
Elected



Dr. Robert Rualthankhuma
Elected



Dr. L.S. Hrahsel
Nominated



Dr. Lalnuna
Nominated



Dr. R. Malsawmi
Nominated



Dr. Lalremliana
Nominated



Dr. LB. Sailo, Director
(Ex-officio)



Dr. A.C. Varshney
Dean (Ex-officio)

VIII. 2015 - 2018



Dr. R. Kapthuama
Elected Member President



Dr. Engkunga Chhangte
Elected



Dr. K. Lalrintluanga
Elected



Dr. Lalremliana
Elected



Dr. Daniel Chiangnuna
Nominated



Dr. Dailo David Varte
Nominated



Dr. C. Sangnghina
Nominated



Dr. Lalhmingthanga
Nominated (MVA)



Dr. Saingura Sailo
Director(Ex-officio)



Dr. P. Lalbiakliana
Nominated



Dr. D. Kathiresan
Dean (Ex-officio)

IX. 2018 - 2021



Dr. C. Sangnghina
Elected Member President



Dr. K. Rokhawla
Elected



Dr. Robert Rualthankhuma
Elected



Dr. M.C. Lallianchunga
Elected



Dr. Saihlira
Nominated



Dr. Vanlalenga
Nominated



Dr. Lalbiakzuala Sailo
Nominated



Dr. Lalremliana
Nominated (MVSA)



Dr. Hmarkunga
Director (Ex-officio)



Dr. Lalnuntluangi Hmar
Dean (Ex-officio)

MIZORAM STATE VETERINARY COUNCIL

LIST OF PRESIDENT



Dr. R. Kapthuama
(1.4.1993 - 31.3.2018)



Dr. C. Sangnghina
(1.4.2018 - till date)

LIST OF REGISTRAR



Dr. Zokhuma
(27.6.1991 - 31.3.2006)



Dr. Lalchungnung Pudaite
(1.4.2006 - 15.7.2011)



Dr. Saingura Sailo
(15.7.2011 - 31.3.2015)



Dr. Daniel Chiangnuna
(1.4.2015 - 31.3.2016)



Dr. Jasper Rongura Sailo
(1.4.2016 - 31.3.2017)



Dr. K.C. Roduhawma
(1.4.2017 - 30.9.2018)



Dr. Robert Rualthankhuma
(from 1.10.2018 - till date)

VETERINARY THROUGH THE AGES

Jonathan Lalsiamthara, DVM, PhD
Post-Doctoral Fellow,
Molecular Microbiology & Immunology,
School of Medicine, OHSU
Portland, OR, USA.

Veterinary profession through ages has evolved tremendously not only in terms of technical capabilities, but also in terms of services that it provided. Looking back in the past, the role of the profession was generally involved in tending to animal health; however, services in recent times become immensely driven by customer's preferences. Before the advent of automobiles, we can imagine animal handlers or pioneer veterinarians would be the caretaker of all the main modes of transportation because this sector would then involve animals such as horses, camels, mules, elephants and bullocks to mention few. In other words, the professionals would be equivalent to today's automobile mechanics! So, it is highly probable that the best veterinarian in those days would be the one who is extremely knowledgeable in the field of bio-mechanics, more specifically muscle injuries, lameness and its upkeep. However, in modern times mastery in these fields and subjects are just optional and is applicable in very few selected places. With technological advancement, transportation by means of animal carriers has become almost obsolete except for certain regions of the world, such as high altitude employing yak, desert for camel etc., but automated means of transportation has replaced almost every aspect. Just based on this simple example, we can understand the changes and approached that has evolved in the area of veterinary medicine and practices.

In modern world, it would be fair to say that veterinary medicine shifted more towards tending to pet animals, mostly cats and dogs. While the exact reason of this inclination is not completely known and could be multi-factorial, it can be presumed that more people need personal companion in the form of these pet animals. Society tends to become more detached and hence these companions are the best to relieve mental stress and anxiety; and therefore who would not go for loveable, cute and appeasing animals! Matter of fact, on a deeper note, our relationship with these companion animals may be deeply rooted in our genes and our brain development, where we are hard wired to

adore these pet animals, just like these animals are inherently docile and dependent on human affections and possibly some of us are more inclined to adore them. The mental attachments to our pet animals are so strong that it is more respectful to address the pet owners as 'parents'. There is no doubt it is easy to declare a 'never complaining, ever fascinated' fellow that has lived with the family for over a decade or more as a 'family member'. This relationship is becoming more and more evident in our society. Pet owners in America alone spent \$69.5 billion on their companions in 2017. Pet food accounts for the single greatest source of spending; veterinary care spending remains the second highest at \$17.07 billion, up 7% from 2016 and the trend is ever increasing. While there are no direct records regarding the money spent on pet animal care, the same increasing trend may be applicable to other nations of the world. Another interesting characteristic observed in the urban areas as highlighted by SunTrust Mortgages survey is that dogs are becoming one of the biggest factors in whether millennials buy a home or not. SunTrust found that 33% of millennials, who purchased their first home, did so because it had a yard and better space for their dog. Marriage comes as second factor at 25% and even less for kids at 19%. And to take it to another level, a survey from Pet Smart Charities, found that 66% of Americans say that adopting a pet would make them happier "in the long run" than winning the lottery and 64% of them said giving up their pet would be worse than losing their job. This momentum is all good especially when ethical and humane touch is concerned, but this also meant that there would be spontaneous rise in the expectations of the services that the veterinary profession is offering. Pet owners are becoming more and more educated regarding their pets biology, health and nourishments. This should be a good driving force for the Veterinary profession in that it promotes up-gradation and specialization the form of services and treatments that it could offer. On biotechnological perspective, in present day, many owners have the budget and frame of mind to opt for cloning of their favourite terminally ill companion animals! Such bonding is uncommon a few decades ago and not only that; the Veterinary Fraternity could not have offered cloning service for their animals.

Veterinary and Animal sciences in many ways has become a forefront of biological research; when it comes to pre-clinical trials, most drugs are tested thoroughly in animal models before they are approved for human use. Through veterinary-medical research many avenues are opened in the area of translational medicine. Veterinarians can also drive the need for better human health by investing in basic medical research. It may not always be necessary that all the

research workers in that area should be veterinarians themselves but rather to facilitate the system in undertaking the action. In a recent paper published in Science Translational Medicine, a group of scientist engineered a 3D printed lung that was grown for 30 days inside a bioreactor tank. The lungs were successfully transplanted to pigs and the animals were kept alive for two month. The animals didn't experience any breathing problems showing normal integration of the organ into the body and also, none of them were given immunosuppressant drugs and none of the transplants was rejected during the period of the study. On a pioneering work on gene editing, several boundaries have been crossed recently in those areas which are not yet ethically acceptable to human. Even though the research work is done in an attempt to solve our problems, it also involves manipulating embryos which could easily be against the norms and religious sentiments. Climate resilient, lean meat phenotype transgenic pigs were generated via genetic engineering in China recently. A functional uncoupling protein 1 (UCP1) gene was transferred from mice to pigs. UCP1 is responsible for brown adipose tissue-mediated thermogenesis and plays a critical role in protecting against cold and regulating energy homeostasis. Modern day pig breeds have lost the UCP1 gene during the course of evolution, by employing CRISPR-Cas9 technique, functional UCP1 gene derived from mouse was reconstituted in host pigs. The viable offspring of these transgenic pigs are more tolerant to cold weather and also generate leaner meat. In principle, heat tolerance genes among many other beneficial genes can also be transferred to animal herds, especially with the global warming looming in the corner. Indeed, one can imagine the potential of biotechnology in improving our herds at tremendous pace. In another work involving radical way of applying genetic manipulation, scientists from University of Edinburgh have developed mutant pigs which are artificially mutated of their original PRRS receptors resulting in the inability of the virus to bind to the cells and effectively generating animals resistant to PRRS virus infection. Theoretically, this same approach can be applied to several infectious diseases, not only in animals but in subsequent human generations in order to thwart infectious diseases that have neither cure nor suitable vaccines. One good example would be making new human generations HIV resistant by innocuously removing the receptors important for virus attachments and entry. The general public acceptance of genetically modified organism (GMO) especially as a food source is currently very low; however, there would be a point in the near future where we cannot further ignore the usefulness of GMO s in solving many of our problems.

With the ever growing human population and its ever increasing demands of food and nourishment, there is intensification of livestock domestication. This resulted not only in possible violation of ethical maintenance of livestock animals but also it increases the interaction of animals and the microorganisms they harboured. In other words, insidious pathogens have more training and mixing ground to adapt and diversify within these compact livestock population. One good example is the influenza virus epidemiology. The influenza virus from animals and man can get mixed in domesticated pigs; the pig became an important intermediate and so is the poultry industry maximizing the avian host. These effects may double the risk of emergence of diseases which are not only generated by human population but by close proximity to densely populated animal populations. Example of such infectious disease emergence includes Zika virus, Japanese encephalitis, Nipah virus. Farming intensification is also blamed for continued emergence of drug resistant microbes, increased global methane production among other things. On the other hand there is an increasing trend flamed by animal activists groups to stop all this possible detrimental effects of meat and milk consumption and a growing inclination to stop consumption of all animal products. While this 'tee-to taller-like' approach to meat consumption is debatable and sensitive in nature, in all these facets, the veterinary community has to come up with solutions to moderate and administer a more humane and favourable system of animal husbandry. On epidemiological perspective, the profession has a need to be highly alert and to operate in a 'detective mode', so as to improve our capabilities in recording and tracking diseases, to forecast their occurrence and further to devise suitable preventative and control policies.

Mizoram Scenario:

The Mizoram veterinary among all other states in India is not far behind regarding clinical services and the expertise it provides. The state is also doing extremely well with regards to production, despite its extremely unfavourable topography. Livestock production would be our best bet to impart a strong influence on the state economy. However, the major hurdle in uplifting the livestock sector would always lie in the availability of feedstuffs and upkeep of bio-security. The community has to think out of the box by having a healthy joined venture projects with other Agricultural counterparts to develop alternate feed sources exclusive to Mizoram. For resolving and improving bio-security, the work of the state government at enforcing security at the border areas is

critical. And for the next decade or two, it would be highly suitable for the veterinary community to envision and extensively invest in livestock production. The Aizawl city with its increasing purchasing power would demand more on meat and other animal products. On a purely business point of view, livestock production related business is active system while clinic based businesses are passive, although it is not a comparison of which is one is superior. If room for business expansion is a concern, it is common knowledge that clinical services directly depend on the population of livestock or companion animals and the other is way round is also true for livestock production. The limit is only governed by the demand, which in the current situation is not met and still is deficit in our production. Hence, the revenue generated by livestock production would indirectly improve the quality of clinical services provided by the veterinary fraternity and vice versa. More research has to be infused in the State-specific nutritional managements in order to get the best out of readily-natively available feed materials found in our state. More systematic studies and researches are also need in the area of alternate farming/feeding practices.

Fate of the Profession:

Will the relevance of veterinary profession decrease? Or will its worth further increase at a certain point in the future? Events such as the emergence of 'arguably' livestock driven-multi drug resistant microorganisms; increase awareness to animal related moral principles; exploding global demands of meat causing meltdown; blame on livestock production and global warming... Do all these trends threaten the prospect of veterinary profession? Will the increase in affection towards companion animals drive yet more generations of Veterinary and related jobs? Many more scenarios can be hypothesized to weigh the profession with regards to future prospects. Like all professions, veterinary profession is moulded by the times we are living; it is shaped and re-shaped by trends of anthropogenic activities. And it's worth will be tested over and over again through generations to come. In spite of it all, the fulfilment, the maintenance of the honour and relevance to each epoch will largely and always depend on the professionals themselves. Best wishes. Thank you.

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Conservation of Mithun (Zosial) in Mizoram

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INTRODUCTION

North Eastern India, where Mizoram lies, has a diverse habitation of wild flora and fauna. Mithun (*Bosfrontalis*), a semi-wild ruminant is found in the hilly regions of North-eastern India, Myanmar, Bhutan, Bangladesh, China and Malaysia. It is often called a pride of North-Eastern hill region of India. This bovine species is believed to be domesticated more than 8000 years ago (Simoons, 1984) from wild gaur (*Bosgaurus*). The Mithun was classified as a separate subgenus, together with Bali cattle (*Bos banteng*), the kouprey (*Bossauveli*) and the gaur (*Bosgaurus*), and distinct from European cattle (*Bostaurus*) and zebu cattle (*Bosindicus*) (Williamson and Payne, 1977). The animal is well adopted anatomically and physiologically at an altitude ranged from 300 – 3000 meter MSL (Simoons, 1984). Out of eight North East States in India, Mithun are available only in Mizoram and other three states (Arunachal Pradesh, Nagaland and Manipur). Currently there are four defined mithun strains: Arunachal, Nagaland, Manipur and Mizoram strains named after the North Eastern states, where they belong. (Mondalet *al.*, 2014).

CHARACTERISTICS OF MITHUN

Mithun has a compact and sturdy build medium to large body size (400-500 kg) with well-developed shoulders, wide and flat forehead. The horns are short, plump, conical and without bends, protruding from the sides of the forehead, distant at the base and rise directly out and up in a gentle curve. The neck is thick and muscular and the double dewlap commences. They have a sharp ridge starting from back of the neck (no hump), tapering on the shoulder and extending up to the middle of the back approximately up to 7th thoracic vertebrae. The forelegs are thick and clumpy but the hind legs are relatively longer and white stockings on all the four legs. The tail is covered with short hair except the tip where it ends with a tuft of hair and hardly extends up to the hock joints but never cross the joint. Males are larger than females.

Mithun (*Bosfrontalis*) has 58 (29 pairs) of chromosomes (Gupta et al. 1995). The first pair of autosome being submetacentric type while the remaining 27 pairs of autosomes are acrocentric. The X chromosomes are submetacentric and similar to cattle and the Y chromosomes are of a small metacentric type like *Bostaurus*.

Mithun is a polyestrus animal showing repeated estrous cycle at an interval of 19 to 24 days unless it is pregnant (Mondalet al., 2004; 2005a-e; 2006a-f; 2008; 2010; 2014). Ovulation occurs between 20 to 31 hour after the onset of estrus (Mondalet al. 2006b; e,f) and no definite breeding season is observed in this species. The length of gestation period, service period and calving interval in mithun varies from 270 to 290 days, 50 to 100 days and 350 to 400 days, respectively. Whereas, the age at puberty and age at first calving varies from 18 to 24 months and 35 to 40 months, respectively (Mondalet al.; 2004; 2005a-e; 2006a-f; 2008; 2010; 2014). The mithun bulls become matured to breed at 3 to 4 years of age.

ECONOMICAL PERFORMANCE

Mithun is an extremely efficient grazer on steep hilly slopes compared to other animals and is primarily reared as meat purpose highly preferred among the tribal people of north-eastern region of India. The tribal's hardly use mithun for milk, draught or any other purposes except for meat. Mithun milk is white to creamy white in colour and sweet in taste. Aroma of the mithun milk is pleasant and liked by the consumers. Mithun produces around 1 to 1.5 kg milk per day (Mondalet al., 2014). However, mithun milk is nutritionally superior to any other domesticated species as it contains high fat (8 to 13%), solid-not-fat (18 to 24%) and protein (5 to 7%) and the pH of mithun milk is 7.09. The high fat and protein content of mithun milk makes it suitable for the preparation of different value added products like paneer, various sweet products, ghee, cream, curd etc. Also, the high protein content in mithun milk can be utilized for cheese production. The growth rate of mithun is 300 to 600 g/ day, comparable with cattle and buffalo but the plasma growth hormone concentration (30-90 ng/ ml) is much higher than any other domesticated animals (Mondalet al. 2004, 2005d, 2006a, c,d). The dressing percentage varies from 48 to 54 % in different age groups. However, an optimum dressing percentage is obtained at 4 to 5 years of age. The quality of mithun meat is also very good with 14 - 19% protein, 0.4 - 3.58% crude fat and 0.06 - 4.97% carbohydrate (Das et al., 2011). The mithun meat is considered more tender and superior over the meat of any other species except pork. Some value added meat product like

meat powder, nuggets, patties and meat block has already been prepared from mithun meat. The quality of mithun hide is superior to cow hides (Das *et al.*, 2011) having more value in tanning industry due to its toughness and longevity, therefore utilized for the production of goods like shoes, garments, bags, jackets, purses, attractive ornamental things and furniture covers. The mithun has a potential to be used as draught animal. Despite this, there is no breeding policy to exploit the economic potential for this valuable species in Mizoram.

DISTRIBUTION AND REARING SYSTEM IN MIZORAM

In Mizoram, mithun is called 'SIAL' by the local people (Mizo) and its population is distributed in four breeding tracts viz. Champhai district, Serchhip district, Lawngtlai district and Siaha district. Currently farmers rear mithun under free-grazing condition in the forest area without any additional housing and almost no human input except occasional salt lick. Sometimes, farmers bring back the female mithun just before parturition and send it back to the forest following parturition.

SOCIAL IMPORTANCE

Mithun plays a unique role in terms of social customs among the Mizo tribes rather than part of livestock production system. In olden days, possession of large number of mithun was regarded as a social status and superiority of the person in the village. Mithun is primarily reared as meat purpose and is used as a ceremonial animal. It plays important role in social and cultural life in various festivities, rituals, marriages and also to settle disputes among the locals.

POPULATION STATUS

Livestock Census of India, 2012 revealed that Mizoram contributed 1.10% (Accounting for 3287 Mithun's) only to the total Mithun population in the country. According to FAO, the survival risk of the breed should be studied when breed population size reaches 5000 breedable females and total population of 10,000. This gradual reduction in population of Mizoram mithun may be due to the fact that traditional system of mithun rearing is based on ownership, keeping the animals under forest pastures without much input and bringing back the desired animal only during some festivals for sacrificial purpose, to shrinkage of grazing areas, lack of scientific strategy on reproduction

and production areas. At the same time, changing social practices among the Mizo people (native inhabitants of Mizoram) who are the custodians of these unique bovines are responsible for decreasing importance of mithun among the younger generation of the society over the years. This adversely affects community identity and structure and reduces the ability of local community to maintain their traditional lifestyles. Many of the Mizo youngsters do not even know how the mithun look like.

CONSERVATION OF MITHUN

The word conservation covers both continued maintenance of genetic variability, improvement and sustainable utilization by exploiting the genetic variability. It takes over thousands of years of evolutionary processes to have unique genes which are associated with adaptability and producing capacity. Conservation of mithun will be useful for scientific study to understand the process of evolution, domestication and the effects of natural and artificial selection, disease resistance and susceptibility which could help in the development of better medication or management of disease. Mithun's are considered "natural gardener" and the loss of germplasm will have adverse effect on the ecosystem. Mithun needs conservation for their economic potential i.e., production of meat and milk. Under proper breeding policy its economic potential for beef, milk and hide production may be exploited to another level. This potential production may be in diverse climatic and environmental conditions and may be beneficial in other areas of the world where similar or complementary conditions exist. Even if mithun is not economically viable, it should still be preserved for cultural and public interest of historical importance since they are part of Mizo heritage, cultural and ecosystem. As per world conservation union, mithun is on the verge of extinction (IUCN, 2002) and efforts should be undertaken from all quarters to preserve the germplasm of mithun and propagate quality.

The phenotypic and genetic characterization is a mandatory pre-requisite for planning any breeding programme or development strategies for improvement or conservation of any species. The primary aim of conservation programme is to study differences among breeds/populations within species. Information on polymorphic loci can be employed to detect population specific alleles to measure the amount of genetic diversity in each species, and to evaluate the change in variation in species over time. Microsatellites have been effectively exploited to understand bovine domestication and migration pattern

and to evaluate genetic diversity and relationships among cattle populations (Mukeshet *al.* 2004, Delgado *et al.*, 2011) and Mithun population (Quet *al.* 2011) Conservation of Mithun will only be successful if it combines with genetic improvement of the Mithun population. The future improvement and development of livestock for agriculture is dependent upon the availability of the genetic variation of the population. By improving their genetic potential in terms of meat and milk production as well as reproductive performance, this precious cattle germplasm could be prevented from becoming eventually extinct in near future. Hence, there is urgent need for genetic improvement of Mithun which can be carried out by planning a suitable breeding programme and implementing at the earliest.

Genetic improvement through open Nucleus Breeding Scheme (ONBS):

Mithun is an underutilized animal and has got a great potential for quality meat, milk and leather production and there is a great scope to promote this species as an organic meat and milk producer through proper breeding strategy. Genetic improvement of mithun can be observed through an open nucleus breeding scheme (ONBS).

In ONBS, the nucleus herd should be maintained at the state level mithun-breeding farm, where the superior males and females can be maintained under good managemental condition. The nucleus herd should be used entirely for production of males for breeding in the population. The aim is to maximize genetic gain in the nucleus herd which will then be passed on to the village herd. The genetic improvement should be strictly carried out within the nucleus herd. However, introduction of superior animals from village herd may be done occasionally. This reduces the rate of inbreeding in the nucleus herd and increases the progress.

Breeding plan may be formulated with a goal to develop of meat type and dairy type mithun through divergent selection. Intensive selection separately for meat and milk purposes should be the prime objective of the nucleus farm. However, this probably will affect the physical appearance of the animals up to certain level (e.g. beef shorthorn and dairy shorthorn). All the parameters of importance of this rare germplasm must be taken into consideration at the time of selection for propagation, preservation and conservation of this valuable species. All the animals in the nucleus herd should be tested for genetic defects.

The progeny generation of nucleus herd should be reared, recorded and the males should be evaluated. Simultaneously, superior males generated out of the nucleus herd should be introduced to the farmers herd at the ratio of 10:1 (female: male). The responsibilities of the state mithun breeding farms will be continuous supply of the superior males separately for meat and milk according to the farmer's choice. The artificial insemination with the semen collected from superior bulls could be an alternative method for improving mithun's that are managed under intensive system in mithun breeding farms (if any) but it need to be standardized to explore the possibility for field application. However, if the farmers are opting for a semi-intensive farming system, artificial insemination using high merit bull semen will be the best option.

Even depending upon the facilities available, other selection methods like marker assisted selection (MAS), progeny testing through multiple ovulation and embryo transfer can be adopted to develop the superior nucleus herd. Even genomic selection may be feasible in the future. Estimation of GH in neonatal calves can also provide the picture of its genetic potential for milk production in female and for superior sire selection in male mithun's. Hence, this technique may extensively be used for identification of genetic superior mithun at the very neonatal level thereby reducing the cost of rearing and increasing profit out of the mithun rearing to a great extent. The existence of correlation between the concentration of growth hormone(GH) in blood and the temperament of mithun's in four different strains, ranging in age from newborn to adult can also be contributory factor to the selection of specific strains of mithun (Mondalet *al*, 2005).

SCIENTIFIC REARING SYSTEM THROUGH SEMI-INTENSIVE FARMING

Currently, under traditional rearing system the mithun owners also have no role to play what so ever in breeding of the mithun's, which mate randomly without any human intervention. This leads to inbreeding due to less breeding bull within the herd, which can hugely affect reproductive performance. To overcome this problem, it is suggested that a temporary housing structure with feeding and watering provisions using locally available materials can be constructed in some strategic locations in the mithun rearing area. Mithun can be trained to come to the shed at a particular time every day by providing little bit of concentrate and salt and they can also tie the animals at night once they come back from the forest after grazing. This will be helpful for farmers to supervise breeding, provide additional feeding and medication to their animals. Besides, farmers will also get an opportunity to look after the individual animal

regularly for any kind of discrepancy or disorder. Moreover, data recording on individual animals will only be possible under scientific rearing system.

Since individual farmers own only few animals it is highly suggested to form mithun rearing society under supervision of a Veterinary officer. Farmers should be trained on how to keep farm recording system and made aware of its importance for the improvement of their animal productivity. In order to avoid inbreeding in the isolates or small herds in a particular locality, exchange of mithun bulls or introduction of superior germplasm from the State nucleus herd are advocated.

CONCLUSION

The mithun, found only in the few states of the North-Eastern Region in India is primarily reared as meat purpose. However, it has got a great potential for quality meat, milk and leather production and there is a great scope to promote this species as an organic meat and milk producer. However, the population of mithun in Mizoram is drastically declining due to several reasons. Therefore, a sound breeding policy as proposed is needed to augment the production performance and simultaneously conserve this valuable germplasm in their home tract. A comprehensive study of physical characters, productive and reproductive performance and genetic characterization of mithun are mandatory pre-requisites so as to formulate suitable breeding strategies for their genetic improvement and also can be an aid to future conservation measures. Genetic improvement should be carried out by the state government through an open nucleus breeding scheme (ONBS). Semen quality control and supply of bulls with high genetic merits (free of genetic defects) to the village herd should be the responsibility of the state mithun breeding farm.

Mithun can be better exploited within its geographical habitat through coordinated approach of all the stake holders (State Govt, NGOs, cooperatives, local entrepreneurs, village communities and Mithun owners/farmers). Introduction of semi-intensive farming system to the mithun rearers will help to generate extra income to the poor mithun rearers for their livelihood.

The future of this rare and majestic bovine species which plays a vital role on economic, cultural and social life of the Mizo people is at stake and demands the timely care and attention at all levels.

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ONE HEALTH - A UNIFYING APPROACH FOR IMPROVING GLOBAL HEALTH

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1. Introduction:

One Health has been defined as “the collaborative effort of multiple disciplines working locally, nationally, and globally to attain optimal health for people, animals and the environment”.

One Health is a new phrase of the 21st century, but the concept extends back to ancient times. It proposes a paradigm shift in approaching diseases of humans and animals essential to meet the challenges of the 21st century. Human and Veterinary medicine, as well as all other scientific health related disciplines, must begin forging co-equal, all-inclusive collaborations. Physicians, Veterinarians, other health scientists, and their respective educational institutions, organizations and health agencies must work together.

2. Scope of One Health:

1. Convergence of human health, animal health and the health of the environment.
2. Human-animal bond.
3. Professional education and training.
4. Basic and Translational Research.
5. Ensure Safe and Secure Food and water supply.
6. Agricultural production and land use.
7. Natural resources and conservation.
8. Disease surveillance, prevention and response.
9. Commonality of diseases among people and animals e.g. cancer, obesity, and diabetes.
10. Environmental agent detection and response.
11. Disaster preparedness and response.
12. Public policy and regulation.
13. Global trade and commerce.
14. Communications and outreach.

3. Historic Background

Since ancient times the concept that animal health and the environment influence human health has been around.

a. *Greek physician Hippocrates (460 BCE - 370 BCE) -*

In his text "On Airs, Waters, and Places" he promoted the concept that public health depended on a clean environment.

b. *Italian physician Giovanni Maria Lancisi (1654-1720)*

He was a pioneering epidemiologist, physician, and veterinarian, and he was the first to advocate the use of mosquito nets for prevention of malaria in humans. He was the pioneer in the control of rinderpest in cattle.

c. *D^{rs} Louis- René Villerme (1782-1863) and Alexandre Parent-Duchâtelet (1790-1835)*

The idea that human, animal and environmental health's are linked was further revived during the French Revolution by D^{rs} Louis-René Villerme (1782-1863) and Alexandre Parent-Duchâtelet (1790-1835) who developed the specialty of public hygiene.

d. Rudolf Virchow (1821-1902),

He was a German physician and pathologist known as the “Father of comparative medicine, cellular pathology, and veterinary pathology coined the term “zoonosis” and said, “Between animal and human medicine there are no dividing lines – nor should there be.”

e. Sir William Osler (1849-1919),

He was called as the “Father of Modern Medicine.” He was influenced by Virchow, helped promote “One Health” as he taught veterinary pathology at Montreal Veterinary College, and established veterinary pathology as an academic discipline in North America.

f. James H. Steele (1913 - 2013)

He was called the “Father of Veterinary Public Health”. In 1947, James H. Steele phrase “One Medicine” (now commonly referred to as “One Health”) which was aimed at unifying human medical and veterinary medical disciplines against zoonotic diseases occurring in the public health arena.

g. Calvin W. Schwabe (1927-2006)

He was veterinary epidemiologist and parasitologist. He developed and promoted James H. Steele phrase “One Medicine” (now commonly referred to as “One Health”) in his textbook “Veterinary Medicine and Human Health”.

4. Emerging Infectious Diseases

- Many emerging health issues are linked to increasing contact between humans and wildlife, intensification and integration of food production, and the expansion of international travel.
- As the number of new infectious diseases emerged in the 20th century, scientists began to recognize the challenges societies face regarding these threats that largely come from animals.
- Of the 1,415 microbes (humans), - 61% (863 microbes) comes from animals. E.g.- rodents transmit plague and typhus to humans, and domestic livestock are the original source of crowd diseases such as measles, mumps, pertussis, and tuberculosis.

The late 20th, and particularly the early 21st century, have been significantly subject to the risks from emerging deadly zoonotic diseases as:-

i) Human immunodeficiency virus/acquired immune deficiency syndrome (AIDS)

AIDS was first recognized by the United States Centers for Disease Control and Prevention (CDC) in 1981 and its cause - HIV infection was identified in the early part of the decade.

ii) Severe acute respiratory syndrome (SARS).

The CDC and Canada's National Microbiology Laboratory identified the SARS genome in April 2003.

iii) Ebola Hemorrhagic fever:

In October 1976, the virus causing Ebola Hemorrhagic fever was identified and named by the U.S. Centers for Disease Control and Prevention (CDC).

iv) West Nile virus (1999):

The 1999 West Nile virus outbreak in New York City highlighted the links between human and animal health. In this outbreak, wild crows began dying about a month or so before people began getting sick. The simultaneous outbreaks were not recognized as caused by the same entity until Dr. Tracey McNamara, an astute veterinarian at the Bronx Zoo, tied them together when her exotic birds began getting sick. After it was recognized that the outbreaks were caused by West Nile virus, a new entity in the Western Hemisphere, the CDC established the National Center for Zoonotic, Vector-Borne, and Enteric Diseases, now the National Center for Emerging and Zoonotic Infectious Diseases.

v) In 2004, the Wildlife Conservation Society (WCS):

Convened a group of health experts at Rockefeller University in New York and developed the phrase "One World - One Health" in order to promote the recognition of the impact of land use and wildlife health on human health. William B. Karesh, one of the leaders of the WCS effort, wrote articles in Foreign Affairs about the health links between humans, animals, and the environment.

vi) The avian influenza (HPAI H5N1):

Epidemic - began in Hong Kong in 1997 forced the global community to recognize that animal health and human health are linked. 1997 outbreak -

affected 18 people, killed 6, and provoked the culling of 1.5 million birds. The HPAI H5N1 virus resurfaced in isolated outbreaks between 1998–2003, A widespread outbreak occurred in mid-2003 in South Korea.

All these were due to the delays in international reporting and weak response measures contributed to the spread of the virus across Southeast Asia. In recognition of the global threat that avian influenza (HPAI H5N1) and other emerging zoonotic diseases posed:

The Food and Agriculture Organization (FAO), World Health Organization (WHO), & World Organization for Animal Health (OIE) developed a strategic framework, a **Tripartite Agreement**, to work more closely together to address the animal-human-ecosystem interface.

vii) Swine flu (6th phase- 2009):

On June 11, 2009, the World Health Organization raised the worldwide pandemic alert level to Phase 6 for swine flu, which is the highest alert level killing an estimated 284,500 people, This alert level means that the swine flu had spread worldwide and there were cases of people with the virus in most countries. The pandemic level identifies the spread of the disease or virus and not necessarily the severity of the disease. Swine flu spread very rapidly worldwide due to its high human-to-human transmission rate and due to the frequency of air travel. All these phenomenon demands the urgent need for all human medical and veterinary medical scientific professionals to renew and increase collaborative efforts.

Apart from these diseases cited above, there are many more emerging and reemerging diseases in today's world which needs a great attention and emergency response.

5. Comparative Medicine

Comparative medicine is the study of disease processes across species and is based on the study of naturally occurring diseases of animals that also afflict humans.

- i) Animals suffer from many of the same chronic diseases such as heart disease, cancer, diabetes, asthma, and arthritis as humans.
- ii) Sometimes a disease entity is recognized in animals long before it is recognized in humans. E.g.- fear-induced heart failure was described in wildlife about thirty years before it was recognized in humans.

6. Environment:

- Urbanization, globalization, climate shift, and terrorism
- Changes in land use, microbial and chemical pollution of land and water sources -
- New threats - health of both animals and humans.
- Medical doctors - turning to environmental health scientists and practitioners to help them track disease outbreaks to the source, prevent chronic disease caused by chemical exposure, and create healthier living environments.
- Veterinarians are also turning to environmental health scientists and practitioners to prevent and control outbreaks and public health emergencies.
- One Health is the perfect unifying concept to bring together human health care practitioners, veterinarians, and public health professionals under the umbrella of environmental health.

7. One Health Commission (OHC)-2007

Dr. Roger Mahr, the President of the American Veterinary Medical Association (AVMA) and Dr. Ronald Davis, the President of the American Medical Association, discuss bringing the animal and human medical communities together. In June 2007, the AMA unanimously adopted this resolution. The AVMA also passed a One Health resolution analogous to the AMA's resolution in July 2008. Finally became the One Health Commission headed by Dr. Roger Mahr. It is headquartered at Iowa State University.

8. One Health Initiative (OHI)

- i) The One Health Initiative is separate from the One Health Commission.
- ii) The One Health Initiative website has been serving as a global repository for all news and information pertaining to One Health.
- iii) There are four important pioneers in the initiation of One Health Initiative; they are Drs Bruce Kaplan, Tom Monath, Laura Kahn, and Jack Woodall.
- iv) OHI Website "proMED" as started in 2008 - serving as a global repository for all news and information pertaining to One Health.
- v) Many national and international organizations and governmental agencies have endorsed the One Health concept.

Organizations promoting this movement includes:-

- The American Medical Association (AMA),
- American Veterinary Medical Association (AVMA),
- The American Society of Tropical Medicine and Hygiene,
- The Centers for Disease Control and Prevention (CDC),
- The United States Department of Agriculture (USDA),
- The American Association of Public Health Physicians,
- The National Oceanic and Atmospheric Administration (NOAA)
- The U.S. National Environmental Health Association (NEHA).
- Additionally, more than 850 prominent scientists, physicians and veterinarians worldwide have endorsed the initiative. (Source: <https://www.wikipedia.org/wiki/One-Health,2015>)

9. One Health - Memorandum of Understanding (MOU)

World Veterinary Association (WVA) & World Medical Association (WMA) signed Historic Collaborative One Health Memorandum of Understanding (MOU) On 13th October, 2012, at the General Assembly meeting of the World Medical Association (WMA) meeting in Bangkok during the 10th -13th October, 2012 by WVA President, Dr. Faouzi Kechrid and WMA President, Dr. Cecil B. Wilson signed the WVA-WMA Memorandum of Understanding. WVA and WMA agreed to collaborate in the One-Health concept, which is a unified approach to veterinary and human medicine in order to improve Global Health. On that occasion, the WVA President gave WMA president a trophy in recognition of the collaboration between the two organizations. In addition, an extensive article on WVA was published in the World Medical Journal of May 2012 (vol. 58) introducing the WVA and also focusing on WVA's perspective regarding the use of antimicrobials.

The WVA-WMA (referred as Parties) Memorandum of Understanding (MOU)**Section I: Global Development Objective:**

The Parties will collaborate in the One-health concept, which is a unified approach to veterinary and human medicine in order to improve Global Health.

Section II: Scope of Cooperation:

The Scope of Cooperation by this Memorandum of Understanding will include;

- 2.1. Support the concept of joint educational efforts between human medical and veterinary medical schools;
- 2.2. Support cross specific disease surveillance and control efforts in order to prevent zoonotic diseases;
- 2.3. Collaborate in the responsible use of antimicrobials with respect to critical antimicrobial lists of humans and animals.
- 2.4. Enhance collaboration between human and veterinary medical professions in medical education, clinical care, public health and biomedical research.

Section III: Use of Logos:

The use of WVA-logo is specifically prohibited without prior written approval from WVA.

The use of WMA-logo is specifically prohibited without prior written approval from WMA.

Section IV: Final provisions:

The Memorandum of Understanding reflects the professional collaboration between WVA and WMA on a basis of good-fellowship and shall represent the understanding of the Parties upon its signing by the WVA and the WMA.

10. International Efforts

- The 1st International One Health Congress *on the topic “ Human Health, Animal Health, the Environment and Global”* met in February 14-16, 2011 in Melbourne, Australia.
- The 1st One Health Conference in Africa was held in July 14-15, 2011 in Johannesburg, South Africa.
- The 1st International One Health Conference on the topic “Disease Eradication: what will it take?” was held in 14 -16 Feb, 2013 at Hotel Africana, Kampala, Uganda.
- The World Bank is investigating how to demonstrate the cost effectiveness of a One Health approach to global health.

Prominent organizations who promote and support One Health including:-

- The World Health Organization (WHO),
- Food and Agriculture Organization (FAO),
- World Organization for Animal Health,(OIE)
- Global Alliance for Rabies Control,
- New Zealand Centre for Conservation Medicine (NZCCM),
- The Institute of Tropical Medicine Antwerp Department of Animal Health,
- The University of California One Health Center,
- Hubnet in Asia
- The One Health Global Network,
- The Infection, Ecology and Epidemiology Network, Uppsala, Sweden.
(Source: <https://www.wikipedia.org/One-Health,2015>)

Worldwide Information System - Global level-

- The OIE - Creation of WAHIS and WAHID (covering 100 priority terrestrial and aquatic animal diseases).
- WHO adopted - the International Health Regulations framework. They make a GROAN as well.
- The OIE, WHO and FAO -
 - Created GLEWS (Global Early Warning System) - to improve early warning - animal diseases + zoonoses worldwide.
 - Consensus document on global measures - medical + veterinary health policies - new requirements to prevent and control zoonoses.
 - One Health Initiative - ProMED-mail section.

One Health Day-

- It was observed in *3rd Nov, 2016 for 1st time*. It was dedicated to an extraordinary Scientist, Admired One Health Supporter Dr.John (Jack) Woodall who died in 25th Oct, 2016.
- The Joined WVA and WMA observed this day to raise the importance of inter-sectorial collaboration to improve the health of people, animals and the environment.

11. Conclusions:

- As the human population explodes, interactions with new zoonotic agents (e.g. viruses) from animal populations will continue to increase.
- We can expect more emerging zoonotic diseases any time.
- The One Health Initiative addresses the need for greater collaboration on many levels (individual, public health, and research) between human, animal, and public health professionals.
- Animal health is truly at a crossroads. Its convergence with human and ecosystem health dictates that the '**one world, one health, one medicine**' concept must be embraced nationally and globally.
- Medical professionals and health scientists must include physicians, veterinarians, parasitologists, microbiologists, physiologists, pathologist, osteopaths, dentists, nurses, biomedical engineers, physicists, biochemists, plant pathologists and others.
- Anyone capable of contributing should be considered important and co-equal without reservations. Together, we can accomplish more in improving global health and we have the responsibility to do so.
- As veterinary profession we can take the responsibility together with our colleagues in other parts of the world to join forces with human medicine to protect and improve animal and public health to have a better place, a better world to live in.
- One Health Works!!

12. References-

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(Dr. Lallawmzuali Ralte completed her B.V.Sc & A.H and M.V.Sc (Veterinary Medicine, Public Health and Hygiene) from College of Veterinary Sciences and Animal Husbandry, Assam Agricultural University in the year 2002 and Jan 2005 respectively. She is now in her 5th Semester of Ph.D programme under the discipline of Veterinary Public Health and Hygiene subject and pursuing her research works on Food Safety. She started her career as Veterinary Assistant Surgeon (VAS) under A.H. & Vety Department, Mizoram from April 2005 till Oct 2008. She is now working as Assistant Professor, Deptt. of Veterinary Public Health and Epidemiology, College of Veterinary Sciences & Animal Husbandry (CVSc & AH), Central Agricultural University (CAU), Selesih, Aizawl, Mizoram since Oct, 2008 . She is a member of Indian Association of Veterinary Public Health Specialists, Indian Association of Veterinary Medicine, Association of Public Health Veterinarians, Life member of Mizo Academy of Sciences (MAS) and Indian Veterinary Association, Mizoram Branch. She also actively participated for the welfare of the public by using her professional skills and was selected by the High Authority of the College as Programme Officer, NSS Units, C.V.Sc & AH, CAU from 2009 till today. She has attended 9 Trainings (Refresher courses/ orientation courses/ participated in winter/ summer school, seminar, conference, workshop etc). She has published 9 Full papers and 12 Abstracts at national level.)

THE SAGA OF VETERINARY SERVICES IN MIZORAM

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The Lushai Hills, now Mizoram was not under the British India for a century or more, although the British Burma, Manipur, Chittagong Hill Tract, Tripura and Assam were included in the British India. The land lock area sandwiched by Burma on the East and south and Bangladesh and Tripura on the West and Cachar District of Assam on the North was left unexploited for some time. When the Mizo Chief namely Bengkhuaia Sailo of Sailam raided the Alexandrapur tea garden, in the pretext that the vast plain area of Cachar used to be under the control of Sailo Chiefs utilised by then as the elephant hunting ground, now cleared of virgin forest for tea garden by the white people. This enraged the Sailo Chief. In the process of incursion in the early hour of January 23, 1871. Mr. James Winchester, the gardener was killed and his only daughter Mary Winchester, the 5 years old girl was taken captive and kept at Sailam village for a year.

The British Government having heard that the ferocious Sailo Chief had not only interfered in the tea business, had taken captive of English citizen, decided to subdue the un-administered country ruled by Sailo Chiefs, arranging three prong attack each headed by a general, from Cachar, Burma and Chittagong. The Chittagong contingent led by General Brownlow and assisted by Captain Thomas Herbert Lewin successfully recovered Mary Winchester from the Sailo Chief, Bengkhuaia of Sailam on 21st January 1872 and signed an accord of Agreement on 22nd January 1872, at river Mat Valley, the place still bear the name as 'Vaibiakkai', meaning, the site of river crossing by the non-mizo's for signing of 'Sa-ui-tan' peace agreement at river Lau.¹

This peace agreement did not last for a long time, the British soldier had to come back in 1888 for the final assault and following their incursion the British Government had erected fort at Lunglei and Aizawl in around 1905, in which the First Bn. Assam Rifles had been stationed at Aizawl. Mizoram, then known as Lushai land remained as an 'Excluded Area' which means that it was directly administered by the Viceroy of Calcutta and remained so till India independence in 1946.

Following permanent administration by the British government, the Assam Rifle being provided with the Mule Platoon in around 1916-17, the first Veterinary Dispensary was located at Chhinga Veng, adjoining to the Mule shed now the New Market at Dawrpui. The Chhinga Veng church stands now in the very spot where the Veterinary Dispensary was located and YMA Hall now occupies the site of Vety. Asst. Quarter. ²

The first Veterinary Asst. Mr Kruvi Angami joined in October 1917 and left in December 1918. In the following year on June 9, 1919 Mr. Hucha Savino Angami became the second Veterinary Doctor, who remained at Aizawl for about 5 years. He visited the interior villages as well. He learnt local dialect and was popularly known as Animal Doctor yet he was known to have successfully treated some people having incurable sores. During his tenure he was blessed with a son, whom he gave the local name 'Zopianga' meaning 'born in Mizoram' Mr Zopianga became the first Chief Secretary of Nagaland. ³

During WW- I, 1914 -18, Mr. Dahrawka left his matriculation study and joined war service and when the WW -I was over, the war service people was given special advantage and was allowed to join West Bengal Veterinary College for a 3 years diploma course and attained a diploma the Graduate of Bengal Veterinary College (G.B.V.C) and joined as Veterinary Assistant at Aizawl on October 1925. He was assisted by Mr. Tuahsanga, and worked together for 26 long years. Mr. Dahrawka was transferred to Dakuakhana, Lakhimpur District in December 1951 and then he was promoted to District Veterinary Officer and posted at Guwahati and later at Silchar. His jurisdiction included Aizawl, Mizoram as well. During his tenure at Silchar the First Animal Health Centre at the cost of Rs 2400 was constructed at Kolasib.

Following the surrendering of Japan in the WW-II, the government of Assam started the first Veterinary College at Nowgong in 1948 to which Mr Zokhuma, the second Veterinarian got admission. This College was shifted to Guwahati in 1949. Mr Zokhuma completed the 3 years Diploma Course in 1950 in the first batch of the college. The first Principal of the college was Captain J.M. Bujarbarua a war veteran, who becomes instrumental in the subsequence development of Veterinary Services in Mizoram vis - a - vis. Establishment of the first technical institution in Mizoram, College of Veterinary Science and Animal Husbandry.

Dr. Zokhuma having completed the course of Graduate Veterinary Science & Animal Husbandry (G.V.Sc & AH) in 1950 joined the post of Veterinary Assistant Surgeon at Silchar, (the name V.A.S. was since given in the year 1928). On October 2, 1953 coinciding with Gandhiji Birthday, the first Community Development Project at Bawngkawn, Aizawl was inaugurated under the leadership of Mr. C.L. Rema, Project Officer in which Dr Zokhuma also was transferred from Silchar and joined the post of Animal Husbandry and Veterinary Officer. When the second C.D. Project was inaugurated at Lunglei, Dr. Zokhuma was transferred in the same post at Lunglei and when the Department post of Sub-Division, A.H & Vety Officer was created Dr Zokhuma was shifted to the department post and remained as such for a long time till the creation of UT; Mizoram in January 20, 1972. In 1974, Dr Zokhuma was promotion to D.V.O. with retrospective effect of UT Day i.e. January 20, 1972.

The government of Assam created the post of District A.H & Vety Officer in 1958. The first DVO was Dr. R.L. Dev, who hired a private house in Chaltlang road, Chanmari for office and soon moved to Pu Tuikhurliana building where now stand The Baptist Church of Mizoram Building and then moved to Zarkawt area with a fully-fledged staffs Dr. R.L. Dev was replaced by Dr. Sangma and later by Dr. Bhuya and Dr. S. C. Bora.

In all these years the strength of Veterinary Officer was hardly a handful such as Dr. Rohmingthanga, Dr. L. Siamliana, Dr. Lianzova Khiangte, Dr. Thanzuala, Dr. Purkyastha, Dr. P.C. Chetia, and Dr. Nath. The Department had one DVO at Aizawl and one subdivision officer at Lunglei till to the time of creation of UT government on January 20, 1972.

The Assam government created 9 CD Blocks in the 1950's, at Thenzawl, Thingdawl, Mamit, Champhai, Serchhip, Darlawn and Lunglei, Saiha, Lawngtlai. The government of India sent Tarlock Singh Commission who recommended establishment of Pig and Poultry Demonstration Farms at Bawngkawn Aizawl, Thenzawl, Thingdawl, Mamit and Lawngtlai. Some of these demonstration farms survived the political unrest of the 1966.

The first A.I Centre in Mizoram was started at Kolasib C.D. Block under the helpful encouragement of the BDO Mr. R.L. Thanzawna. Dr. R. Kapthuama, V.A.S at Aizawl holding the charge of Kolasib Centre from Aizawl started A.I. in cow in February 1961. The first Animal show was also organised at Chanmari

Rifle Range in January 1961, this area was vacated by Assam Rifles and the private buildings were yet to come up.

In Piggery development the exotic breed Large White Yorkshire breed was first introduced by the Political Officer of North Eastern Frontier Agency (NEFA) Mr. Lalrina Sailo of Kelsih which gained acceptance and become very popular in very short time in Mizoram. The pace of Piggery development effort was speeded up by the establishment of 100 Sow unit farm sponsored by North Eastern Council (NEC), Government of India in early 1970s. And new farms were opened up in Mampui, Lawngtlai District, Lunglei, Thenzawl and Kolasib. Subsequently the Piggery villages were established in Kawlkulh and Sairang. The Boar farm has been established at Selesih for Artificial Insemination purpose. The indigenous variety of pigs (now named as Tuikuk Vawk) becomes almost totally replaced by exotic breed, and A.I in Pig become the practice of the day throughout Mizoram. The Pig Federation started in 1980's is doing very well.

As a result of Reorganisation of the N.E. Region, Mizoram was given UT status under the Administrative head of Lt. Governor. Initially the 4 Departments namely Veterinary, Forest, Agriculture and Soil Conservation were under one Director. The A.H & Vety. Department was headed by a Deputy Director, Dr. R. Kapthuama w.e.f.. November 1972 under the common Director of Agriculture etc for a period of 2 years. In November 1974, the incumbent Dy. Director Dr. R. Kapthuama was promoted to Jt. Director and declared as Head of Department and functioned independent of the common Director. Dr. R. Kapthuama was promoted to Director in October 1981 and retired on 1st March 1994. Dr. Lalsawma Hrahsel becomes Director for one month i.e. March 1994. Dr. C. Lianmawia took over as Director from Dr. L. S. Hrahsel. And Dr. C. Sangnghina was promoted to Director w.e.f.. January 9, 2002 and the next incumbent Dr. Lalbiakmawia Sailo retired in 28.2.2016 and Dr. Saingura Sailo was promoted to Director w.e.f.. 1.3.2016 to 31.5.2018 and the present incumbent is Dr. Hmarkunga w.e.f.. 1.6.2018 till now.

The Department faced a number of hardships particularly in respect of candidates for study of Veterinary Science. The Department obtained approval of the Planning Commission, for arranging a special stipend for bright and willing matriculates to study P.U. Science on condition to study Vety. Science in the University. This was helpful yet some students defected to study Engineering Course. When the post of V.A.S was advertised in the National Paper, we got a solitary response who now retired on superannuation.

Although the Department had to start literally from scratch, yet the Department expanded rather rapidly, by inducting Veterinarians who had completed their bond year service in North Eastern Frontier Agency (now Arunachal Pradesh) namely Drs. R. Zolawma, L.S. Hrahsel, Liansanga and Lianzova Khiangte in 1970's. Also fresh graduates become available. In regard to Disease Prevention and Hospital facilities, the first Veterinary Hospital was established at Aizawl in the year 1974 followed by Champhai, Kolasib and Lunglei. In order to facilitate administration, the 3 revenue Districts Aizawl, Lunglei and Saiha was not enough there by Veterinary District at Champhai, Kolasib and Serchhip were created well ahead of creation of the revenue district in these places sometimes in 1980's. There are 5 Veterinary Hospitals, 35 Dispensaries and 103 Sub-Centre/ Rural Animal Health Centre spread over the breath and length of Mizoram.²

The department also had Disease Investigation Laboratory at Aizawl which is now improved to Poly Clinic Laboratory in 2014. Now the Veterinarians working in the Department are about 130 vets under the Director and 4 Joint Directors and a number of D.D. or DVOs and Vety. Asst. Surgeons.

In Milk production and Dairy development, the Anand Pattern Societies have been introduced under the guidance of National Dairy Development Board (NDDB). The MULCO at Aizawl is processing and marketing 20,000 litres per day. Whereas one plants each at Kolasib and Lunglei having a capacity of 5000 litres per day each are also functioning.

The Artificial Insemination with warm liquid semen was introduced in cow. Now the frozen semen is popularly used in all the areas covered by the societies. In recent years the government had imported a number of dairy Cows from Punjab, Haryana and Shillong areas under the NLUP programme.

In Poultry development, the departments established the Central Poultry Farm with Hatchery in 1975, followed by the Broiler Chick Farm with Hatchery in 1984 at Tanhril. This farm has been doing very well, yet the recent development in the 2013, the farm has been converted to Joint Venture Project proposed to produce 30,000 chicks per month.

The much needed College of Vety. Science & Animal Husbandry was established in 1997 at Selesih Farm Complex covering an area of approximately 800 acres of Farmland under the Central Agricultural University, Imphal. The college become the first fully fledged Technical College in Mizoram and also

played very important part in promotion of National Integrity and the College has become 'Mini India' where various cultures and customs got mingled and progressing very well.

Reference:

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2. *Dr. Zokhuma's unpublished document.*
3. *Statistical Handbook of Mizoram 2013.*

Dr. R. Kapthuama hi kum 1958 ah College of Veterinary Science, Guwahati atangin BVSc & AH a zo va, a zawh kum hian he College ah Distinction a passed in 1st Position ah a passed a ni. A pass chhuah hlim hian Assistant Lecturer in College of Veterinary Science, Guwahati ah a thawk a, heta a thawh lai hian Assam Overseas Scholarship hmu in Wye Agricultural College, London University ah Ph.D zir turin a kal a, kum 1968 ah Ph.D Degree a hmu a ni. Ani hi Mizo zinga Ph.D Degree nei hmasa ber a ni. London atang a a rawn haw hnu hian Veterinary College Guwahati ah Professor hna a thawh chhunzawm a. Kum 1972 a Mizoram in Union Territory State a hmuh khan Mizoram Sawrkar hnuaiah Deputy Director, A.H & Veterinary Department ah hotu lu ber nih na a chelha, hemi atang hian Department ah lu ber Director nihna chelhin kum 1994 February thla tawp lam ah Pension in a chhuak ta a ni. Mizoram a A.H & Veterinary Department hmar kaitu niin hmun hrang hrang a Department hnu hma leh Farm te hi ama kaihhruaina hnuaia din tan niin, vawiin ni thleng hian a hnathawh rah Department chhungah hmuh theih a awmin, kan la chhawr chhunzawm zel a ni.

MIZORAM STATE VETERINARY COUNCIL
LIST OF VETERINARY REGISTERED PRACTITIONERS

Sl. No	Registration No.	Name
1	2	3
1	MZ-01/0001/91	Dr. Zokhuma (L)
2	MZ-01/0002/91	Dr. R. Kapthuama (L)
3	MZ-01/0003/91	Dr. Zolawma (L)
4	MZ-01/0004/91	Dr. Thanzuala (L)
5	MZ-01/0005/91	Dr. V. Liansanga (L)
6	MZ-01/0006/91	Dr. Lalsiamliana
7	MZ-01/0007/91	Dr. C. Lianmawia (L)
8	MZ-01/0008/91	Dr. Harold Chalruala (L)
9	MZ-01/0009/91	Dr. Parimal Kumar Nath
10	MZ-01/0010/91	Dr. B. Prasad
11	MZ-01/0011/91	Dr. L.B. Sailo
12	MZ-01/0012/91	Dr. C. Sangnghina
13	MZ-01/0013/91	Dr. Lalnuntluanga (L)
14	MZ-01/0014/91	Dr. Saingura Sailo
15	MZ-01/0015/91	Dr. P. Lalbiakliana (L)
16	MZ-01/0016/91	Dr. K. Rokhawla
17	MZ-01/0017/91	Dr. R. Lalthanpuia (L)
18	MZ-01/0018/91	Dr. B.C. Thanthuama (L)
19	MZ-01/0019/91	Dr. Lalhnuna
20	MZ-01/0020/91	Dr. Daniel Chianghnuna
21	MZ-01/0021/91	Dr. R.C. Lalmuana
22	MZ-01/0022/91	Dr. Hmarkunga
23	MZ-01/0023/91	Dr. Jasper Rongura Sailo

Sl. No	Registration No.	Name
1	2	3
24	MZ-01/0024/91	Dr. Saihlira
25	MZ-01/0025/91	Dr. K.C. Roduhawma
26	MZ-01/0026/91	Dr. C.H. Thanchunga (L)
27	MZ-01/0027/91	Dr. Lalnuntluanga Colney
28	MZ-01/0028/91	Dr. Lalchungnung Pudaite
29	MZ-01/0029/91	Dr. Dailo David Varte
30	MZ-01/0030/91	Dr. Zodinglana (L)
31	MZ-01/0031/91	Dr. Lalremliana
32	MZ-01/0032/91	Dr. R. Thangthuama
33	MZ-01/0033/91	Dr. H. Lalrinthanga (L)
34	MZ-01/0034/91	Dr. Lalripuii Sailo
35	MZ-01/0035/91	Dr. Thangkungi
36	MZ-01/0036/91	Dr. Lalthankima
37	MZ-01/0037/91	Dr. Vanlalbuanga
38	MZ-01/0038/91	Dr. K. Lalrohluva
39	MZ-01/0039/91	Dr. Lalhmingthanga
40	MZ-01/0040/91	Dr. P.L. Biaktinsanga (L)
41	MZ-01/0041/91	Dr. Lalnunhlina Ralte
42	MZ-01/0042/91	Dr. R. Lalmalsawmi
43	MZ-01/0043/91	Dr. Lalnghinglova
44	MZ-01/0044/91	Dr. K. Vanlaldika (L)
45	MZ-01/0045/91	Dr. Vanlaltlana (L)
46	MZ-01/0046/91	Dr. R.L. Tanpuii
47	MZ-01/0047/91	Dr. C. Vanlalnggheta (L)
48	MZ-01/0048/91	Dr. K. Lalnithanga (L)
49	MZ-01/0049/91	Dr. B. Zonghinga

Sl. No	Registration No.	Name
1	2	3
50	MZ-01/0050/91	Dr. F. Lalsawmliana (L)
51	MZ-01/0051/91	Dr. Engkunga Chhangte
52	MZ-01/0052/91	Dr. K. Lalrintluanga
53	MZ-01/0053/91	Dr. Kaizahlun (L)
54	MZ-01/0054/91	Dr. K.V.L. Rochharzela
55	MZ-01/0055/91	Dr. F. Laldawla
56	MZ-01/0056/91	Dr. Lalmakzuala
57	MZ-01/0057/91	Dr. F. Lalramhluna
58	MZ-01/0058/91	Dr. R. Zothanmawii
59	MZ-01/0059/91	Dr. Lalnuntluangi Hmar
60	MZ-01/0060/91	Dr. K. Lalchhuanawma
61	MZ-01/0061/92	Dr. Lalrotluanga Sailo
62	MZ-01/0062/92	Dr. F. Laltanpuia
63	MZ-01/0063/92	Dr. H. Prasad
64	MZ-01/0064/92	Dr. Thanseia Chhangte
65	MZ-01/0065/92	Dr. Lalrintluanga
66	MZ-01/0066/92	Dr. R. Lalmakthanga
67	MZ-01/0067/92	Dr. Lalrinawma Khiangte
68	MZ-01/0068/92	Dr. Puna Chandra Chetia
69	MZ-01/0069/92	Dr. Vanlalenga
70	MZ-01/0070/92	Dr. M. Zohmingthangi
71	MZ-01/0071/92	Dr. Lalsawithuama
72	MZ-01/0072/92	Dr. P.C. Lalsangzuala
73	MZ-01/0073/92	Dr. C. Lalrintluanga
74	MZ-01/0074/92	Dr. Lalhlimpuia
75	MZ-01/0075/92	Dr. F. Vanlalruata

Sl. No	Registration No.	Name
1	2	3
76	MZ-01/0076/92	Dr. C. Lalzuitluanga
77	MZ-01/0077/92	Dr. P.B. Chhetri (L)
78	MZ-01/0078/92	Dr. F. Lalrinliana (L)
79	MZ-01/0079/92	Dr. T.C. Lalthanzauva
80	MZ-01/0080/92	Dr. C. Lalthankhumi
81	MZ-01/0081/92	Dr. Ngurzidingi Sailo
82	MZ-01/0082/92	Dr. K. Lalhlimpuii
83	MZ-01/0083/93	Dr. C. Khawlthangmawia
84	MZ-01/0084/93	Dr. B. Lallawmsanga
85	MZ-01/0085/93	Dr. C. Zartzokima
86	MZ-01/0086/93	Dr. Lalsawma Hrahsel
87	MZ-01/0087/93	Dr. R. Malsawma
88	MZ-01/0089/93	Dr. P.C. Larokima
89	MZ-01/0090/94	Dr. H. Laltlanmawia
90	MZ-01/0091/91	Dr. Lalramenga Fanai (L)
91	MZ-01/0092/92	Dr. Vanlalhruaia
92	MZ-01/0093/91	Dr. Rozika Chhangte (L)
93	MZ-01/0094/94	Dr. Zirsangliani
94	MZ-01/0095/91	Dr. M.D. Jalaluddin
95	MZ-01/0096/95	Dr. Zohmingliani Hrahsel
96	MZ-01/0097/95	Dr. Vanlalhruaia Pachuau
97	MZ-01/0098/95	Dr. Rosangzuala
98	MZ-01/0099/95	Dr. Lalsanglien Ralsun
99	MZ-01/0100/95	Dr. Robert Rualthankhuma
100	MZ-01/0101/95	Dr. John Lalhnuna
101	MZ-01/0102/95	Dr. Shahlu Khaila

Sl. No	Registration No.	Name
1	2	3
102	MZ-01/0103/95	Dr. C. Sanghluna
103	MZ-01/0104/95	Dr. Thangzadinga
104	MZ-01/0105/96	Dr. H. Pachhunga
105	MZ-01/0106/96	Dr. CH. Lalthafamkima
106	MZ-01/0107/96	Dr. Lalnunsangi
107	MZ-01/0108/96	Dr. Esther Lalzoliani Ralte
108	MZ-01/0109/96	Dr. Lalengzami Hrahse
109	MZ-01/0110/96	Dr. Lalmangaiha
110	MZ-01/0111/96	Dr. Vanlalmangaihzualla
111	MZ-01/0112/97	Dr. Lalfamkima
112	MZ-01/0113/97	Dr. H. Vanlalrawna
113	MZ-01/0114/98	Dr. V. Lalzarzova
114	MZ-01/0115/98	Dr. Lalnunfeli Tozhawng
115	MZ-01/0116/98	Dr. Saipari Sailo
116	MZ-01/0117/98	Dr. Vanlalthuma (L)
117	MZ-01/0118/98	Dr. H. Lalzarliana
118	MZ-01/0119/98	Dr. Lalbiakzualla Sailo
119	MZ-01/0120/98	Dr. K. Lalbiaknungi
120	MZ-01/0121/98	Dr. C. Neihthangpuii
121	MZ-01/0122/98	Dr. Biaklianzualli
122	MZ-01/0123/98	Dr. Beihnia Hlycho (L)
123	MZ-01/0124/98	Dr. V. Vanneitluanga
124	MZ-01/0125/99	Dr. Lalingura Tlau
125	MZ-01/0126/99	Dr. Lizzy Zothanpari
126	MZ-01/0127/99	Dr. K. Lalrempuii
127	MZ-01/0128/99	Dr. C. Lalhlupuii

Sl. No	Registration No.	Name
1	2	3
128	MZ-01/0129/99	Dr. Bijoy Chhetri
129	MZ-01/0130/99	Dr. Lalrosangi Fanai
130	MZ-01/0131/99	Dr. Lalrindiki
131	MZ-01/0132/99	Dr. Amos Vanlalhruaia
132	MZ-01/0133/99	Dr. Evangeline Pari
133	MZ-01/0134/99	Dr. C. Lalmuanthanga
134	MZ-01/0135/20	Dr. Ashish Kumar Ghosh
135	MZ-01/0136/02	Dr. Krishna Chandra Dass
136	MZ-01/0137/02	Dr. Lalhruaipuii
137	MZ-01/0138/02	Dr. Lallawmzuali Ralte
138	MZ-01/0139/03	Dr. Vanlahmuaka
139	MZ-01/0140/03	Dr. M.C. Lallianchunga
140	MZ-01/0141/03	Dr. Ruby Ngurnunmawii Sailo
141	MZ-01/0142/03	Dr. Lalthawmmawii
142	MZ-01/0143/03	Dr. Rosangzuali Chhakchhuak
143	MZ-01/0144/03	Dr. Ngursailova
144	MZ-01/0145/03	Dr. Rebecca Lalhmangaihi Khiangte
145	MZ-01/0146/03	Dr. P.S. Mahapatra
146	MZ-01/0147/04	Dr. Michelle C. Lallawmkimi
147	MZ-01/0148/04	Dr. Lalzaidami
148	MZ-01/0149/04	Dr. Charlie C. Chawngthu
149	MZ-01/0150/04	Dr. C. Rinawma
150	MZ-01/0151/05	Dr. Malsawmtluangi Ralte
151	MZ-01/0152/05	Dr. Lalmuanpuii
152	MZ-01/0153/05	Dr. Rinmuanpuii Ralte
153	MZ-01/0154/05	Dr. Rody Lalrinfeli Fanai

Sl. No	Registration No.	Name
1	2	3
154	MZ-01/0155/05	Dr. Blessa Sailo
155	MZ-01/0156/06	Dr. Joy Lalmuanpuia Kataria
156	MZ-01/0157/06	Dr. K. Lalnghinglova
157	MZ-01/0158/06	Dr. Lalmuanpuia Samte
158	MZ-01/0159/06	Dr. K. Zothanpuui
159	MZ-01/0160/07	Dr. K. Vanlalpeka
160	MZ-01/0161/07	Dr. Lalramngheta
161	MZ-01/0162/07	Dr. Philip Lawmsangzuala
162	MZ-01/0163/07	Dr. Lalhruaitluangi Sailo
163	MZ-01/0164/07	Dr. Lalthazuali
164	MZ-01/0165/07	Dr. R. Zapaw Azyu
165	MZ-01/0166/07	Dr. Jonathan Lalsiamthara
166	MZ-01/0167/07	Dr. C. Laldailova (L)
167	MZ-01/0168/07	Dr. C. Lalthianghlimi
168	MZ-01/0169/07	Dr. Benjamin Lalduhawma
169	MZ-01/0170/08	Dr. Lalrinawma Khiangte
170	MZ-01/0171/08	Dr. Bindeshwar Prasad
171	MZ-01/0172/08	Dr. Lalhmingmuana Sailo
172	MZ-01/0173/08	Dr. Zosangpuui
173	MZ-01/0174/08	Dr. Gracia Lalchamzuali
174	MZ-01/0175/08	Dr. C. Lalremruata
175	MZ-01/0176/08	Dr. Lalhumlina Tochwawng
176	MZ-01/0177/08	Dr. Andrew M.S. Zuala
177	MZ-01/0178/08	Dr. H. Lalbiaksangi
178	MZ-01/0179/08	Dr. Suzanne Malsawmthangi
179	MZ-01/0180/08	Dr. Abigail Remlalfakawmi

Sl. No	Registration No.	Name
1	2	3
180	MZ-01/0181/08	Dr. Angela L. Renthlei
181	MZ-01/0183/09	Dr. Vanlahluna
182	MZ-01/0184/09	Dr. H. Lalliankimi
183	MZ-01/0185/09	Dr. David Malsawmdawngliana
184	MZ-01/0186/09	Dr. K. Lalrinkimi
185	MZ-01/0187/09	Dr. Elizabeth Lalbiaknungi Leihang
186	MZ-01/0188/09	Dr. Malsawmtluanga Fanchun
187	MZ-01/0189/09	Dr. Melody Lalhriatpuii
188	MZ-01/0190/09	Dr. H. Lalrinkima
189	MZ-01/0191/09	Dr. James Lalthansanga
190	MZ-01/0192/09	Dr. Lalrinhlui
191	MZ-01/0193/09	Dr. Zomuankima
192	MZ-01/0194/10	Dr. David Malsawmkima
193	MZ-01/0195/10	Dr. Kawlthanmawia
194	MZ-01/0196/10	Dr. P.L. Lalruatfela
195	MZ-01/0197/10	Dr. Michael Lalramhluna
196	MZ-01/0198/10	Dr. Lalchawimawia Ralte
197	MZ-01/0199/10	Dr. Lalramdintluanga
198	MZ-01/0200/10	Dr. H. Vanlalhruaii
199	MZ-01/0201/10	Dr. H. Lalpanmawia
200	MZ-01/0202/11	Dr. J.B. Rajesh
201	MZ-01/0203/11	Dr. H. Lalzampaia
202	MZ-01/0204/11	Dr. C. Lalnunpuia
203	MZ-01/0205/11	Dr. Lalnunpuii Zadeng
204	MZ-01/0206/11	Dr. Lalnunfela Chhangte
205	MZ-01/0207/11	Dr. Nancy Laldinpuii

Sl. No	Registration No.	Name
1	2	3
206	MZ-01/0208/11	Dr. Lalchamliani
207	MZ-01/0209/11	Dr. Laltlankimi
208	MZ-01/0210/11	Dr. Lalsangpuii
209	MZ-01/0211/11	Dr. Amy Zorinkimi
210	MZ-01/0212/11	Dr. Peter Malsawmtluanga
211	MZ-01/0213/11	Dr. V. Lalzawmliana
212	MZ-01/0214/11	Dr. Lalrinpuia
213	MZ-01/0215/11	Dr. Vanlalchhandama
214	MZ-01/0216/11	Dr. C. Lalchhuanawma
215	MZ-01/0217/11	Dr. A. Lalruatdiki
216	MZ-01/0218/11	Dr. Isaac B. Tungnung
217	MZ-01/0219/11	Dr. Lallianpuii Kawlni
218	MZ-01/0220/11	Dr. C. Lalchhandama
219	MZ-01/0221/11	Dr. F. Laldinthara
220	MZ-01/0222/12	Dr. John Beizalaisa Khithie
221	MZ-01/0223/12	Dr. Andrew Lalremruata
222	MZ-01/0224/12	Dr. R. Lalhruaitluanga
223	MZ-01/0225/12	Dr. K. Lalrinsangi
224	MZ-01/0226/12	Dr. Francis Lalmangaiha
225	MZ-01/0227/12	Dr. Zodinpuia
226	MZ-01/0228/12	Dr. Lalthansanga Khiangte
227	MZ-01/0229/12	Dr. Lalrinmawii Hmar
228	MZ-01/0230/12	Dr. Lalrengpuii Sailo
229	MZ-01/0231/12	Dr. V. Zodinsanga
230	MZ-01/0232/12	Dr. Eneth Lalhuthangi
231	MZ-01/0233/12	Dr. Laltlanmawii Hnamte

Sl. No	Registration No.	Name
1	2	3
232	MZ-01/0234/12	Dr. Lalmangaihzuali
233	MZ-01/0235/12	Dr. Ramngaihzuali
234	MZ-01/0236/13	Dr. Beizakaw Vyhtu
235	MZ-01/0237/13	Dr. Malsawmkima
236	MZ-01/0238/13	Dr. Andrew Lalruatkima
237	MZ-01/0239/13	Dr. H. Lalruatfela
238	MZ-01/0240/13	Dr. Mesak Byhnadaosa Solo
239	MZ-01/0241/13	Dr. Vanlalhriatpuia
240	MZ-01/0242/13	Dr. C. Lalawmpuia
241	MZ-01/0243/13	Dr. Reuben Malsawmdawngliana
242	MZ-01/0244/13	Dr. Vanramhlimpuii
243	MZ-01/0245/13	Dr. J. Lalrinawma
244	MZ-01/0246/13	Dr. Malsawmsangi
245	MZ-01/0247/14	Dr. Salem Lallawmawmi
246	MZ-01/0248/14	Dr. L.H. Lalrosanga
247	MZ-01/0249/14	Dr. H. Lalawmpuii
248	MZ-01/0250/14	Dr. Hmingthanzuala
249	MZ-01/0251/14	Lt. Col. Dr. G.K. Kataria
250	MZ-01/0252/14	Dr. Lalruatfela Sailo
251	MZ-01/0253/14	Dr. Deborah Lallawmawmi
252	MZ-01/0254/15	Dr. A. Lalramliana
253	MZ-01/0255/15	Dr. Freddy H. Siamthara
254	MZ-01/0256/15	Dr. Manesia Khaimeichho
255	MZ-01/0257/15	Dr. Vanlalngilneii Ralte
256	MZ-01/0258/15	Dr. Debbie Lalngaihawmi
257	MZ-01/0259/15	Dr. K. Hmingthansangi

Sl. No	Registration No.	Name
1	2	3
258	MZ-01/0260/15	Dr. Elizabeth V.L. Hmangaihzuali
259	MZ-01/0261/15	Dr. C. Lalsangzuala
260	MZ-01/0262/15	Dr. M.S. Dawngliana
261	MZ-01/0263/15	Dr. J. Vanthanga
262	MZ-01/0264/15	Dr. Michael Lalramchhana
263	MZ-01/0265/15	Dr. Lallawmkima
264	MZ-01/0266/15	Dr. Lalrintluanga
265	MZ-01/0267/15	Dr. Timothy Lalmalsawma
266	MZ-01/0268/15	Dr. K. Lalchhanhima
267	MZ-01/0269/15	Dr. Daniel C. Lalchhuanawma
268	MZ-01/0270/15	Dr. Sindhu Berian
269	MZ-01/0271/15	Dr. Lalrinzuali Ngente
270	MZ-01/0272/15	Dr. Lalnunpuia Chinzah
271	MZ-01/0273/15	Dr. Dorothy Lalchhanhimi
272	MZ-01/0274/15	Dr. Rebecca Lalkhawngaihsangi
273	MZ-01/0275/15	Dr. Lalhmunmawia
274	MZ-01/0276/15	Dr. Vanlalmangaihi Fanai
275	MZ-01/0277/16	Dr. P.C. Lalhriatpuia
276	MZ-01/0278/16	Dr. David Lalramenga
277	MZ-01/0279/16	Dr. Lalhruaitluangi
278	MZ-01/0280/16	Dr. Rebecca Lalmuanpuui
279	MZ-01/0281/16	Dr. M. Lalmangaihzuala
280	MZ-01/0282/16	Dr. John Rozarlina
281	MZ-01/0283/16	Dr. Lalhruaitluanga
282	MZ-01/0284/16	Dr. V.L. Rozami
283	MZ-01/0285/16	Dr. Hmarthansanga

Sl. No	Registration No.	Name
1	2	3
284	MZ-01/0286/16	Dr. Malsawmdawngkimi Colney
285	MZ-01/0287/17	Dr. Lalrinkima
286	MZ-01/0288/17	Dr. H. Remsangzela
287	MZ-01/0289/17	Dr. Vanlalmangaihhsanga
288	MZ-01/0290/17	Dr. Sonam Limbu
289	MZ-01/0291/17	Dr. H. Zorinpuii
290	MZ-01/0292/17	Dr. Malsawmkima Pachuau
291	MZ-01/0293/17	Dr. David Lalthlamuana
292	MZ-01/0294/17	Dr. R. Zosangkima
293	MZ-01/0295/17	Dr. Lalremruata
294	MZ-01/0296/17	Dr. C. Lalhlimpuia
295	MZ-01/0297/17	Dr. H.C. Joane Mary
296	MZ-01/0298/17	Dr. Francis Lalrinmawia Sailo
297	MZ-01/0299/17	Dr. Rahul Singh Arya
298	MZ-01/0300/18	Dr. Jonathan Lalremsanga
299	MZ-01/0301/18	Dr. George Martin Lalruattluanga
300	MZ-01/0302/18	Dr. Michael V. Lalrinzuala
301	MZ-01/0303/18	Dr. David H. Beihroly
302	MZ-01/0304/18	Dr. Lalnunfela
303	MZ-01/0305/18	Dr. C. Vanlalpianpuia
304	MZ-01/0306/18	Dr. Jessie C. Lalthasanga
305	MZ-01/0307/18	Dr. Lalnundanga
306	MZ-01/0308/18	Dr. Zothanpuii
307	MZ-01/0309/18	Dr. Nancy Lalruatfeli
308	MZ-01/0310/18	Dr. G. Jennifer Lallawmkimi
309	MZ-01/0311/18	Dr. F.C. Beihroki
310	MZ-01/0312/19	Dr. Altaf Hussain
311	MZ-01/0313/19	Dr. Immanuel Lalthlamuana Pulante