Department of Medical Research

Bulletin

Vol. 31, No. 4 **Published Since 1986** **December, 2018**

CONTENTS

The objective of this Bulletin is to disseminate international news about health and medicine, developments, activities in medical and health research in DMR. The Bulletin is published monthly and delivered to township hospitals.

The Editorial Committee, therefore, invites contributions concerning information about research activities and findings in the field of medicine and health.

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Published by the Editorial Committee
Department of Medical Research

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Highlights on Useful Research Findings Applicable to Health

Determination of Formaldehyde Content in Clothing and Toys for Children

Formaldehyde is a colourless, reactive and strong smelling gas at room temperature. It is one chemical in a large family of chemical compounds, CH_2O, called volatile organic compounds (VOCs).

Formaldehyde resins are used in fabrics to bind pigments to the cloth, to enhance wrinkle resistance and water repellency, as well as to provide stiffness and to use as a fire retardant.

Increases in temperature (hot days) and increased humidity both increase the release of formaldehyde from coated textiles. Formaldehyde is carcinogenic and allergenic.

The permissible limit of formaldehyde content in textiles used in clothing and toys for children under 3 years of age is 30 mg/kg or 2.5 mg/l (The European standard).

The aim of this study was to determine and compare the content of formaldehyde concentration of clothing and toys for children. Fifty clothing samples and 50 stuffed toy samples were collected randomly from the various markets in Yangon during January to March 2017.

Formaldehyde content was determined by UV/Vis Spectrometry (UVmini-1240, Shimadzu Japan) according to the water extraction method (ISO 1418-1).

The result showed that formaldehyde content was in the range of 0 to 4629 mg/kg for clothing samples. Forty-one clothing samples (82%) showed free of formaldehyde. Nine clothing samples (18%) found above the permissible limit of formaldehyde.

Among 9 samples, 1 sample showed 154 times higher than the permissible limit. In the toy samples, formaldehyde concentration was in the range of 0 to 57 mg/kg.

Formaldehyde was free in all toy samples except one sample. The level of formaldehyde concentration was higher in clothing samples than toy samples.

This study showed that high formaldehyde concentration in clothing and toys for children under 3 years of age and recommended that new clothing should be washed before wearing to reduce the level of formaldehyde.

ကလေးအဝတ်အထည်နှင့် အရုပ်တို့တွင် ဖော်မတီဟိုက် ပါဝင်မှုကိုလေ့လာခြင်း

ဖော်မတီဟိုက်သည် အခန်းအပူချိန်တွင် အရောင်မရှိ၊ ဓာတ်ပြုလွယ်ခြင်းနှင့် စူးရှ၍ အနံ့ရှိသော ဒြပ်ပေါင်းတစ်မျိုးဖြစ်သည်။ ၎င်းကာဗွန်ဒြပ်ပေါင်းစု (CH_2O) သည် ကြီးမားသော ဓာတုမျိုးနွယ်တစ်မျိုးဖြစ်ပြီး အင်္ဂေျပျံလွယ်သော ဒြပ်ပေါင်းဖြစ်သည်။ ဖော်မတီဟိုက်ရီဇင်း (Formaldehyde Resin)ကို အထည်များတွင်အရောင်ပေါင်းစပ်နိုင်ရန်၊ ခေါက်ကြောင်းအတွန့်ရရှိစေရန်၊ ရေစိုခံနိုင်ရန်နှင့် တင်းမာမှုမရှိစေရန်ထောက်ပံ့ပေးရာတွင်အသုံးပြုကြသည်။ ထို့အပြင် မီးလောင်ခြင်းကို နှောင့်နှေးစေရန်အတွက်လည်း အသုံးပြုသည်။ ဖော်မတီဟိုက်ပါဝင်မှုရှိသော အဝတ်အထည်များသည် အပူချိန်နှင့် စိုထိုင်းစနှစ်ခုစလုံး မြင့်မားလာပါက ဖော်မတီဟိုက်ထွက်ရှိမှုများလာသည်။ ဖော်မတီဟိုက်သည် ကင်ဆာနှင့်ယားယံခြင်းတို့ကိုဖြစ်စေသည်။ ၃ နှစ်အောက်ကလေးများ၏ အဝတ်အထည်နှင့်အဝတ်အထည်စဖြင့်ပြုလုပ်ထားသော အရုပ်တို့တွင် ဖော်မတီဟိုက်ပါဝင်မှုသတ်မှတ်ပမာဏသည် ၃၀ မီလီဂရမ်/ကီလိုဂရမ် (သို့မဟုတ်) ၂.၅ မီလီဂရမ်/လီတာအောက်ဖြစ်သည်။

ဤသုတေသန ရည်ရွယ်ချက်မှာ ကလေးအဝတ်အထည်နှင့်အရုပ်တို့တွင် ဖော်မတီဟိုက်ပါဝင်မှုနှင့် ၎င်းနှစ်မျိုး၏ပါဝင်မှုကို နှိုင်းယှဉ်ရန်ဖြစ်သည်။ ကလေးအဝတ်အထည် (၅၀) ခုနှင့် အဝတ်အထည်ပိတ်စနှင့်ပြုလုပ်ထားသော အရုပ် (၅၀) ခုတို့ကို ရန်ကုန်မြို့ရှိ ဈေးများမှ ကျပန်းနည်းဖြင့် ၂၀၁၇ ခုနှစ် ဇန်နဝါရီလ မှ မတ်လထိ ကောက်ယူစုဆောင်းခဲ့ပါသည်။ ဖော်မတီဟိုက်ပါဝင်မှုကို ရေဖြင့်ဆွဲထုတ်ခြင်း (ISO1418-1) နည်းအရ UV/Vis Spectrometry (UVminl-1240, Shimadzes, Japan) ဖြင့် တိုင်းတာခဲ့ပါသည်။ အဝတ်အထည်တွင် ဖော်မတီဟိုက်ပါဝင်မှုသည် ၀ မီလီဂရမ်/ကီလိုဂရမ်မှ ၄၆၂၉ မီလီဂရမ်/ကီလိုဂရမ်အတွင်းတွေ့ရသည်။ နမူနာလေးဆယ့်တစ်ခု ၈၂ ရာခိုင်နှုန်းသည် ဖော်မတီဟိုက်ပါဝင်မှုမရှိကြောင်းတွေ့ရပြီး နမူနာ (၉) ခု ၁၈ ရာခိုင်နှုန်းသည် ပါဝင်ကြောင်းတွေ့ရသည်။ နမူနာ (၉) ခုထဲမှ (၁) ခုသည် သတ်မှတ်သော ပမာဏထက် (၁၅၄) ဆမြင့်မားကြောင်း တွေ့ရသည်။ အရုပ်နမူနာတွင် ဖော်မတီဟိုက်ပမာဏသည် ၀ မီလီဂရမ်/ကီလိုဂရမ်မှ ၅၇ မီလီဂရမ်/ကီလိုဂရမ်အတွင်း တွေ့ရသည်။ အရုပ်နမူနာ (၁) ခုမှလွဲ၍ ကျန်နမူနာများသည် ဖော်မတီဟိုက်ပါဝင်မှုမရှိကြောင်း တွေ့ရသည်။ အဝတ်အထည်နမူနာများနှင့် အရုပ်နမူနာများ၌ ဖော်မတီဟိုက်ပါဝင်မှုသည် အဝတ်အထည်တွင် ပိုမိုပါဝင်ကြောင်းတွေ့ရသည်။

ဤသုတေသနတွင် ၃ နှစ်အောက် ကလေးများ၏ အဝတ်အထည်နှင့်အရုပ်တို့တွင် ဖော်မတီဟိုက်ပမာဏများစွာပါဝင်ကြောင်း တွေ့ရပါသည်။ ဤသုတေသနတွေ့ရှိချက်အရ ဖော်မတီဟိုက်ပမာဏလျော့ကျစေရန် အဝတ်အထည်အသစ်များကို မဝတ်ဆင်မီ လျော်ဖွတ်သင့်ကြောင်း အကြံပြုတင်ပြအပ်ပါသည်။

*Reference:Mya Mar Lar, Khin Phyu Phyu, San San Htwe, et al.*The 46th Myanmar Health Research Congress Programme & Abstracts:154.(Third Prize for Poster Award)

Abstract of Research Paper Published or Read Abroad by DMR Scientists

Extensively Drug Resistant Tuberculosis in Myanmar: Its Burden and Mutations in the Second-line Drug Targets

Myanmar is one of the 30 high tuberculosis (TB) and high multidrug-resistant TB (MDR-TB) burden countries in the world. The burden of drug resistance as well as type and prevalence of mutations for each anti-TB drug resistance in different geographical area is important to enumerate especially in area of high TB prevalence.

A cross-sectional study was performed to identify extensively drug-resistant tuberculosis (XDR-TB) burden among multidrug-resistant tuberculosis (MDR-TB), and second-line drug-resistant mutations in Myanmar. Multidrug-resistant (MDR) *Mycobacterium tuberculosis* isolates were collected during 2015-16. Phenotypic drug susceptibility testing was performed and drug-resistant mutations were identified using Sanger sequencing. Genotypes were determined using standardized 24-loci Mycobacterial Interspersed Repetitive Unit-Variable Number Tandem Repeat (MIRU-VNTR) typing to explain the relations of drug resistant patterns with genotypes. Out of 89 MDR tuberculosis isolates; 12 were extensively drug-resistants, and 24 were pre-extensively drug-resistants with 21 fluoroquinolones (FQs) resistance and 3 second-line injectables (SLIDs) resistance. The results showed high proportions of cross-resistances among second-line drugs.

The correlations between phenotypic and molecular drug susceptibility test results for FQs and SLIDs were 91%, respectively. The most frequent mutation for FQ-resistants was D94G (8/21) in *gyrA* and A1401G (11/15) in *rrs* for SLIDs.

A new non-synonymous mutation (S62A) was found in one FQ resistant isolate. The dominant genotype was Beijing type (76/89) which was found in over two-third of MDR-TB and all XDR-TB showing a high representation of Beijing genotypes in the MDR and XDR-TB population. MIRU-VNTR profiles were diverse and only one minor cluster with two isolates was found.

Any of pre-XDR or XDR strains were not clustered either, and there were no correlations among mutation patterns, genotypes, and geological regions. The genotypic characters suggested the possibility that expansion of XDR-TB including pre-XDR might not because of horizontal transmission from person to person, but developed during infection and treatment of MDR-TB.

There were high proportions of XDR-TB and pre-XDR-TB amongst MDR-TB and, cross-resistances in second-line drugs were high with various types of

genetic mutations in Myanmar. It is crucial to use fluoroquinolone judiciously and ideally to reserve for treatment of resistant TB especially in TB endemic areas. This suggests that drug resistances for the second-line anti-tuberculosis drugs should be monitored intensively, and molecular drug susceptibility tests should be considered to apply.

Reference: *Phyu Win Ei, Wah Wah Aung, Chang C L, et al.* Poster and Oral Presentation at International Meeting of the Federation of Korean Microbiological Societies, at KINTEX, Republic of Korea on November 2-3, 2017. (Outstanding Oral Presentation Award)

News about Medicine & Health

First Aid Management of Food Poisoning

This commonly occurring disease spectrum ranging from simple abdominal cramps, diarrhea to fatal dehydration, sepsis and nervous system damage; contracted following ingestion (within 48 hrs.) of toxin contaminated food items is called food poisoning. Millions of people worldwide are affected at a given time with food poisoning. It's distinguished from food borne infections by the rapidity of onset of illness (<48hrs), mainly because clinical features of food poisoning are brought about by preformed (mainly bacterial) toxins already present in food at the time of ingestion. Whereas food borne infections occur as a result of infection of gut by the pathogens present in food, which usually takes about 2 – 5 days to clinically manifest.

Causes of food poisoning;

A. Infectious agents and their products

Viruses – e.g. norovirus, rotavirus, Bacteria – e.g.salmonella, shigella, E-coli, staphtlococci, campylobacter and clostridium botulinum (botulism) and then rarely parasites – e.g. giardia

B. Other toxins

Mushrooms, Improperly prepared exotic foods – e.g. barracuda (ciguatera), Pesticides and other agrochemical residue in plants Food items can be contaminated at any time of process, from production and harvesting to preparation and serving. Poor sanitary practices of food handlers, unsafe preparation and storage (contamination by house flies) accounts to majority of food poisoning cases.

Signs and symptoms of food poisoning (can develop as rapid as within 30 mins. Following ingestion)

Abdominal cramps, Diarrhea – ranges from simple watery diarrhea to frank blood in stools, Nausea, Vomiting, Dehydration, Fever, Blurred vision, Double vision, Difficulty in speaking, Difficulty in swallowing, Muscle weakness and paralysis, Difficulty in breathing. Most cases of food poisoning are self-limiting. Proper first aid care will be the only modality of management required. However, first aid training should render proper knowledge on identification of danger signs and symptoms that requires prompt admission to hospital.

Signs and symptoms that require urgent hospitalization

Development of neurological features described above under botulism, Difficulty in breathing, Collapse and loss of consciousness, Features of severe dehydration – e.g. confusion, no urine output, sunken eyes, dry mouth etc, Severe vomiting or diarrhea, Vomiting blood or passage of blood in stools, Fever > 102 F, Development of symptoms following seafood or mushroom ingestion, Development of abdominal swelling, Children and Pregnant women.

First aid management

1. Reassure the patient as most are self-limiting conditions. 2. Look for danger signs and call for medical help immediately. 3. If unconscious; secure the airway by head tilt, chin lift and jaw thrust maneuvers. Check for breathing and circulation. Start CPR immediately and follow basic life support guidelines. 4. Control vomiting; do not give solid foods until vomiting stops. Give frequent sips of small amount of water to keep patient hydrated. Keep patient lying on side to prevent aspiration. 5. Oral rehydration solutions can be used much effectively for rehydration. 6. Avoid alcohol, caffeine and sugary drinks. 7. Light diet is preferred in first days of illness. 8. Always watch for signs of dehydration, specially with children. Urine output is a good indicator of hydration status. 9. Oral anti-diarrheal medications are not recommended. In children avoid these entirely. These may slow elimination of toxins worsening the condition. 10. When vomiting and diarrhea settles, start introducing normal solid foods gradually. 11. Prebiotics present in certain foods (e.g. lactobacillus – in yoghurt) help the recovery of damaged intestines and will shorten period of diarrhea. 12. Get plenty of rest for the patient.

Prevention

1. Wash hands thoroughly before preparing and eating food. 2. Do not eat suspicious looking food items. 3. Buy prepared food only from safe outlets that adhere to sanitary guidelines. 4. Check the expiry dates on packaging before consuming food. 5. Do not buy canned foods that look damaged, bloated up or crushed. 6. Keep raw foods away from prepared

meals. 7. Refrigerate or freeze foods properly. Adhere to the instructions given by the manufacturer. 8. Be careful on eating previously un-encountered exotic foods. Specially mushrooms and seafood.

Source: file:///C:/Users/user/Desktop/posion%20note/food %20posoining/First%20Aid%20Management%20of%20 Food%20Poisoning%20-.htm.

Contributed by Biological Toxicology Research Division

Mercury: Sources, Transport, Deposition, and Impacts

Mercury is a persistent, bioaccumulative, toxic pollutant. When released into the environment, mercury accumulates in water laid sediments, is ingested by fish, and is passed up the food chain to humans. Mercury contamination is a significant public health and environmental problem.

How does mercury get into the environment?

Mercury is introduced into the environment in three ways. First, mercury is emitted into the atmosphere naturally from volcanoes, the weathering of rocks, forest fires, and soils. Second, mercury is emitted as a result of human activities such as the burning of fossil fuels and municipal or medical waste. Lastly, mercury can be re-introduced into the environment through natural processes such as evaporation of ocean water.

What are the impacts on public health and the environment?

Food, primarily fish, is the most significant source of mercury exposure for the general population. When deposited in water bodies, mercury is easily converted in sediments to methyl mercury, a particularly toxic form of mercury, that is ingested by and bioaccumulates in the tissues of animals and fish, and is passed up the food chain to humans.

Mercury exposure in humans can lead to a variety of negative health effects, including neurological, kidney, gastrointestinal, genetic, cardiovascular, and developmental disorders, and even death. Methyl mercury is transported across the blood-brain barrier and, in pregnant women, across the placenta into the fetus. Methyl mercury inhibits the normal development of the nervous system in young children and fetuses. In addition to the effect on humans, fish-consuming wildlife such as loons, eagles and otters are also at risk from mercury contamination. Reproductive problems are the primary concern for birds suffering from mercury poisoning. Other mercury effects in birds and mammals include liver damage, kidney damage, and neurobehavioral effects.

Health effects of exposures to mercury

Mercury is a neurotoxin. How someone's health may be affected by an exposure to mercury depends on a number of factors:

- the form of mercury (for example, methylmercury or elemental (metallic) mercury)
- the amount of mercury in the exposure;
- the age of the person exposed (the fetus is the most vulnerable)
- how long the exposure lasts
- how the person is exposed (breathing, eating, skin contact, etc.)
- the health of the person exposed.

Source: https://www.des.nh.gov.

Contributed by Chemical Toxicology Research Division

Chemists Discover How Blue Light from Digital Devices Speeds Blindness

Blue light from digital devices and the sun transforms vital molecules in the eye's retina into cell killers, according to optical chemistry research at The University of Toledo.

The process outlined in the study, which was recently published in the journal *Scientific Reports*, leads to age-related macular degeneration, a leading cause of blindness in the United States.

"We are being exposed to blue light continuously, and the eye's cornea and lens cannot block or reflect it," Dr. Ajith Karunarathne, assistant professor in the UT Department of Chemistry and Biochemistry, said. "It's no secret that blue light harms our vision by damaging the eye's retina. Our experiments explain how this happens, and we hope this leads to therapies that slow macular degeneration, such as a new kind of eye drop."

Macular degeneration, an incurable eye disease that results in significant vision loss starting on average in a person's 50s or 60s, is the death of photoreceptor cells in the retina. Those cells need molecules called retinal to sense light and trigger a cascade of signaling to the brain. "You need a continuous supply of retinal molecules if you want to see," Karunarathne said. "Photoreceptors are useless without retinal, which is produced in the eye."

Karunarathne's lab found that blue light exposure causes retinal to trigger reactions that generate poisonous chemical molecules in photoreceptor cells. "It's toxic. If you shine blue light on retinal, the retinal kills photoreceptor cells as the signaling molecule on the membrane dissolves," Kasun Ratnayake, a PhD student researcher working in Karunarathne's cellular photo chemistry group, said. "Photoreceptor cells do not regenerate in the eye. When they're dead, they're dead for good."

Karunarathne introduced retinal molecules to other cell types in the body, such as cancer cells, heart cells

and neurons. When exposed to blue light, these cell types died as a result of the combination with retinal. Blue light alone or retinal without blue light had no effect on cells. "No activity is sparked with green, yellow or red light," Karunarathne said. "The retinal-generated toxicity by blue light is universal. It can kill any cell type." The researcher found that a molecule called alpha tocoferol, a Vitamin E derivative and a natural antioxi- dant in the eye and body, stops the cells from dying. However, as a person ages or the immune system is suppressed, people lose the ability to fight against the attack by retinal and blue light.

"That is when the real damage occurs," Karunarathne said. The lab currently is measuring light coming from television, cell phone and tablet screens to get a better understanding of how the cells in the eyes respond to everyday blue light exposure.

"If you look at the amount of light coming out of your cell phone, it's not great but it seems tolerable," Dr. John Payton, visiting assistant professor in the UT Department of Chemistry and Biochemistry, said. "Some cell phone companies are adding blue-light filters to the screens, and I think that is a good idea." To protect your eyes from blue light, Karunarathne advises to wear sunglasses that can filter both UV and blue light outside and avoid looking at your cell phones or tablets in the dark. "Every year more than two million new cases of age-related macular degeneration are reported in the United States," Karunarathne said. "By learning more about the mechanisms of blindness in search of a method to intercept toxic reactions caused by the combination of retinal and blue light, we hope to find a way to protect the vision of children growing up in a high-tech world."

Source: https://www.sciencedaily.com.
Contributed by Quality Assurance Division

Colorectal Cancer Screening Process Failure Associated with Increased Mortality Risk

Screening for colorectal cancer (CRC) reduces the risk for cancer death. To examine the effect on CRC mortality of failures in the screening process (e.g., not being screened, inadequate follow-up of abnormal screening results), investigators retrospectively examined screening histories of 1750 enrollees of two large integrated healthcare systems who died of CRC between 2006 and 2012.

Receipt of screening was defined as colonoscopy within 10 years, sigmoidoscopy or barium enema within 5 years, or fecal testing within 2 years of CRC diagnosis. About 3500 cancer-free patients were identified for comparison purposes. Results were as follows:

- Most patients (76%) who died of CRC had an identifiable failure in the screening process, including failure to screen in 34%, failure to screen at appropriate intervals in 33%, and failure to receive surveillance or follow-up in 9% (most commonly after a positive fecal occult blood test).
- Failure to screen was inversely associated with the number of primary care provider encounters before diagnosis.
- A lower proportion of case patients (24%) versus cancer-free patients (45%) were up to date on screening.
- Being up to date on screening was associated with a 62% reduction in CRC mortality risk.

Failures to screen, screen at appropriate intervals, and follow up on abnormal results occurred significantly more frequently in patients who died from CRC than in cancer-free patients. Being up to date with CRC screening seems intuitively beneficial, but this study quantifies the magnitude of the benefit and the causes and consequences of failures in the screening process. Most failures were due to potentially correctable factors, and they occurred in a healthcare setting with high CRC screening uptake. These findings could serve as a blueprint for other healthcare systems to identify and address gaps in delivery of CRC screening and follow-up of abnormal tests. Doubeni CA, *et al*. Modifiable failures in the colorectal cancer screening process and their association with risk of death. Gastroenterology 2018 Sep 27; [e-pub].

Source: http://dx.doi.org/10.1053/j.gastro.2018.09.040.
Contributed by Bioinformatics Division

Hepatitis C Vaccine could Drastically Reduce Transmission among Injecting Drug Users

Among the most serious consequences of the opioid epidemic is the spread of hepatitis C among injecting drug users. A major new study shows that if a hepatitis C vaccine were successfully developed, it would dramatically reduce transmission of hepatitis C among drug users – even though it's unlikely such a vaccine would provide complete immunity. The study, which employed mathematical modeling, is published in *Science Translational Medicine*.

Vaccines are currently available for hepatitis A and hepatitis B, but a vaccine for hepatitis C is still under investigation. A clinical trial is testing an experimental hepatitis C vaccine on injecting drug users. Unlike many other vaccines, the hepatitis C vaccine is not expected to provide complete immunity, known as sterilizing immunity. A vaccinated person exposed to HCV could still be infected with the virus, although the amount of virus in the bloodstream would be significantly reduced.

The new study calculated how effective a vaccine that

provided incomplete immunity would be in preventing transmission among injecting drug users. Researchers developed a mathematical model to determine transmission probabilities in drug users who share needles and syringes. They simulated the sharing of two types of common syringes used by drug users. Using previously published data from people infected or reinfected with hepatitis C virus, researchers then estimated the transmission risks between injecting drug users. The study estimated that if an injecting drug user shared a syringe/needle with a second drug user who was infected with hepatitis C, there would be a greater than 90 percent chance the first drug user would also become infected with hepatitis C after six months. However, if a vaccine were used, the transmission risk would decrease to between 1 and 25 percent, depending on the type of needle used and other factors.

Hepatitis C is caused by the hepatitis C virus (HCV). Long-term infection with HCV, known as chronic hepatitis C, usually is silent for many years. But the disease eventually can cause cirrhosis (advanced scarring) of the liver, liver cancer and liver failure. In the United States, as many as 3 million people are chronically infected with HCV, with more than 30,000 new infections per year.

While extremely effective, antivirals alone are unlikely to eliminate hepatitis C globally. The researchers thought about the combine antivirals with a hepatitis C vaccine and harm-reduction measures such as needle-syringe exchange programs, opioid substituteon therapy and behavioral counseling will be needed to eliminate hepatitis C and their findings suggest that a hepatitis C vaccine would be an essential part of a comprehensive prevention strategy to meet the World Health Organization's goal of eradicating hepatitis C by 2030. Marian Major el al., "Modeling of patient virus titers suggests that availability of a vaccine could reduce hepatitis C virus transmission among injecting drug users," *Science Translational Medicine* (2018).

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ဆေးသုတေသနဦးစီးဌာနမှ ကျန်းမာရေးဝန်ဆောင်မှု အစီအစဉ်

- အဆိပ်အတောက်ဖြစ်ခြင်း (**Poisoning**) နှင့်ပတ်သက်သည့် သတင်းအချက်အလက်များသိရှိလိုပါလျှင် ဆေးသုတေသနဦးစီးဌာနရှိ အမျိုးသားအဆိပ်ထိန်းချုပ်ရေးဌာန (ဖုန်း- ၀၁ ၃၇၉၄၀) သို့မဟုတ် (ဖုန်း- ၀၉ ၇၃၁၅၃၃၄/ ၀၉ ၇၈၀၁၈၁၈) သို့ ဆက်သွယ်ဆွေးနွေးနိုင်ပါသည်။

သို့

ကျန်းမာရေးနှင့်အားကစားဝန်ကြီးဌာနမှဝန်ထမ်းများအားဖြန့်ဝေပေးပါရန်မေတ္တာရပ်ခံအပ်ပါသည်။