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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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Highlights on Useful Research Findings Applicable to Health

Pattern of Anti-tuberculosis Drug Resistance among HIV Associated Tuberculous Meningitis Patients

Drug resistant tuberculosis (TB) is a major public health problem worldwide. Human immunodeficiency virus (HIV) infection associated tuberculous meningitis (TBM) patients further complicates the management and has poor prognosis. A cross-sectional laboratory based study was carried out to determine anti-TB drug susceptibility pattern of *Mycobacterium tuberculosis* complex isolated from HIV-TBM coinfected patients at Wai Bargi, Thakayta and Mingaladon Specialist Hospitals in Yangon.

During January to October 2017, cerebrospinal fluid (CSF) samples collected from 140 HIV patients with clinically presumptive TBM were proceeded for isolation and drug susceptibility testing (DST) of *Mycobacterium tuberculosis* complex. First line DST of isoniazid (INH), rifampicin (RIF), ethambutol (EMB) and streptomycin (SM) was carried out by solid culture based-proportion method. Pyrazinamide (PZA) and second line anti-TB drug susceptibility (fluoroquinolones and aminoglycosides) were detected by liquid culture based Mycobacterial Growth Indicator Tube (MGIT) method.

The culture positive isolates were found in 12% (17/140) cases. Among 17 MTB isolates, resistance to SM was 4(23.53%), INH 8(47.05%), RIF 8(47.05%), EMB 3(17.64%) and PZA 2(11.76%) isolates, respectively. Overall drug susceptibility pattern revealed that 7 isolates (41.17%) were sensitive to all first line anti-TB drugs and 10 isolates (58.82%) were resistant to at least one of the first line anti-TB drugs. Two (11.76%) cases showed mono-resistance including one SM resistance (5.88%) and one EMB resistance (5.88%); 4(23.52%) isolates showed two-drug resistance (INH and RIF), 2 isolates (11.76%) showed three-drug resistance (SM+INH+RIF and INH+RIF+PZA), 1(5.88%) isolate showed four-drug resistance (SM+INH+RIF+EMB), and 1(5.88%) isolate showed five-drug resistance (SM+INH+RIF+EMB+PZA). Eight isolates (47.05%) showed multi-drug resistance (MDR) which were resistant to at least INH and RIF.

All the 8 MDR isolates were sensitive to tested second line anti-TB drugs. Patients with CD4 count of ≤100 cells/µl and previously treated cases were significantly associated with any anti-TB drug resistance ($p<0.05$). These findings highlights high burden of anti-TB drug resistance among HIV infected patients and can support for elaborative management strategies of HIV associated tuberculous meningitis.

ခုခံအားကျဆင်းမှုကူးစက်ရောဂါရှိသည့် တီဘီဦးနှောက်အမြှေးရောင်ရောဂါသည်များ၏ တီဘီဆေးယဉ်ပါးမှုကိုလေ့လာခြင်း

တီဘီဆေးယဉ်ပါးလာမှုသည် ကမ္ဘာတစ်ဝှမ်းကြုံတွေ့ နေရသော အဓိကကျသည့် လူထုကျန်းမာရေးဆိုင်ရာ ပြဿနာတစ်ခုဖြစ်သည်။ တဖန် ခုခံအားကျဆင်းရောဂါသည်များတွင် ဖြစ်ပွားသော တီဘီဦးနှောက်အမြှေးရောင်ရောဂါသည်လည်း ကုသပိုင်းဆိုင်ရာ ရှုပ်ထွေးမှုနှင့်တကွ နောက်ဆက်တွဲဆိုးကျိုးများကို ဖြစ်ပေါ်စေလျက်ရှိပါသည်။ ဤလေ့လာမှုသည် ဝေဘာဂီ၊ သာကေတနှင့် မင်္ဂလာဒုံဆေးရုံတို့ တွင်ဆေးကုသမှုခံယူနေသော တီဘီဦးနှောက်အမြှေးရောင်ရောဂါရှိသည်ဟု ယူဆရသည့် ခုခံအားကျဆင်းရောဂါသည်များ၏ တီဘီဆေးယဉ်ပါးမှုကိုလေ့လာခြင်းဖြစ်သည်။ ၂၀၁၇ ခုနှစ်၊ ဇန်နဝါရီ လမှ အောက်တိုဘာ လအတွင်း တီဘီဦးနှောက်အမြှေးရောင်ရောဂါရှိသည်ဟု ယူဆရသော ခုခံအားကျဆင်းရောဂါသည် လူနာ ၁၄၀ ဦး တို့ ၏ကျောရိုးဆွင်းရှိအရည်ကို ရယူကာ Streptomycin၊ Isoniazid၊ Rifampicin၊ Ethambutol တီဘီဆေးယဉ်ပါးမှုကို solid culture based-proportion method ဖြင့်သော်လည်းကောင်း၊ Pyrazinamide နှင့် second line တီဘီဆေးများ၏ ယဉ်ပါးမှုများကို liquid culture based Mycobacterial Growth Indicator Tube (MGIT) method ဖြင့်သော်လည်းကောင်းဆလ့်လာခဲ့ပါသည်။

တွေ့ ရှိချက်များအရလူနာ၁၇ ဦး (၁၂ ရာခိုင်နှုန်း) တွင် တီဘီရောဂါပိုးတွေ့ ရှိခဲ့ပြီးယင်းတို့ အနက်၇ ဦး (၄၁.၁၇ ရာခိုင်နှုန်း) သော လူနာများမှ တီဘီပိုးသည် ဆေးယဉ်ပါးမှုမရှိကြောင်း တွေ့ ရပြီး ကျန် ၁၀ ဦး (၅၈.၈၂ ရာခိုင်နှုန်း) တွင်မူ ဆေးယဉ်ပါးမှုအမျိုးမျိုးကိုတွေ့ ရှိရပါသည်။ ဆေးတစ်မျိုးတည်းသာ ယဉ်ပါးသော တီဘီရောဂါပိုးကို လူနာ ၈ ဦး (၁၁.၇၆ ရာခိုင်နှုန်း) တွင်လည်းကောင်း၊ ဆေးနှစ်မျိုးယဉ်ပါးရောဂါပိုးကိုလူနာ ၄ ဦး (၂၃.၅၂ ရာခိုင်နှုန်း) တွင်လည်းကောင်း၊ ဆေးသုံးမျိုးယဉ်ပါးရောဂါပိုးကို လူနာ၂ ဦး (၁၁.၇၆ ရာခိုင်နှုန်း) တွင်လည်းကောင်း၊ ဆေးလေးမျိုးယဉ်ပါးရောဂါပိုးကိုလူနာ ၁ ဦး (၅.၈၈ ရာခိုင်နှုန်း) တွင်လည်းကောင်း၊ ဆေးငါးမျိုးယဉ်ပါးရောဂါပိုးကို လူနာ ၁ ဦး (၅.၈၈ ရာခိုင်နှုန်း) တွင်လည်းကောင်းတွေ့ ရှိရပါသည်။ (၄၇.၀၅ ရာခိုင်နှုန်း) သော လူနာများတွင် MDR ဆေးယဉ်ပါးမှုရှိနေသော တီဘီရောဂါပိုးကို တွေ့ရှိခဲ့ရသည်။ ဆေးတစ်မျိုးခြင်းအားဖြင့် Streptomycin ဆေးယဉ်ပါးမှု (၂၃.၅၃ ရာခိုင်နှုန်း)၊ Isoniazid ဆေးယဉ်ပါးမှု (၄၇.၀၅ ရာခိုင်နှုန်း)၊ Rifampicin ဆေးယဉ်ပါးမှု (၄၇.၀၅ ရာခိုင်နှုန်း) နှင့် Ethambutol ဆေးယဉ်ပါးမှု (၅.၈၈ ရာခိုင်နှုန်း) တို့ ကိုတွေ့ ရှိခဲ့ရသည်။ထို့ အပြင် CD4 count 100 အောက်ကျဆင်းခြင်း၊ ယခင် တီဘီဆေးကုသမှုခံယူထားခြင်းတို့ သည် ဆေးယဉ်ပါးမှုနှင့် သိသာစွာပတ်သက်နေသည်ကိုလည်းထွေ့ ရှိရပါသည်။

ဤလေ့လာမှုမှ တွေ့ ရှိချက်များသည်ခုခံအားကျလူနာများအနက် တီဘီဆေးယဉ်ပါးမှုများကို ဖော်ထုတ်ပြီးလျှင် ခုခံအားကျလူနာများတွင် ဖြစ်ပွားသော တီဘီဦးနှောက်အမြှေးရောင် ရောဂါကုသခြင်းတွင်လည်း အကျိုးပြုစေနိုင်ပါသည်။

Reference: Aye Su Mon, Sabai Phyu, Mi Mi Htwe,et. al. The 46th Myanmar Health Research Congress Programme & Abstracts: 10.(First Prize for Young Researcher Award & Basic Research)

Abstract of Research Paper Published or Read Abroad by DMR Scientists

Awareness of Malaria and Treatment-seeking Behaviour among Persons with Acute Undifferentiated Fever in the Endemic Regions of Myanmar

Myanmar has a high burden of malaria with two-third of the population at risk of malaria. One of the basic elements of the Roll Back Malaria Initiative to fight against malaria is early diagnosis and treatment within 24 hours of fever. Public awareness about malaria is a key factor in malaria prevention and control and in improving treatment-seeking behaviour.

A large community-based survey was carried out in 27 townships of malaria endemic regions in Myanmar in 2015 which reported on the knowledge, behaviour and practices around malaria in the general population. We used the data already collected in this survey to assess (i) general public awareness of malaria and (ii) treatment-seeking behaviour and associated factors among persons with acute undifferentiated fever.

A total of 6597 respondents from 6625 households were interviewed (response rate of 99.5%). About 85% of the respondents were aware that mosquito bite was the mode of transmission of malaria and 90% mentioned that malaria was preventable. However, only 16% of the respondents knew about anti-malaria drug resistance.

There were certain misconceptions about the transmission of malaria such as dirty water, same blood group, sharing shelter, sleeping/eating together and poor hygiene. Health facility staff were the most common source of information about malaria (80%). Nearly one-fourth (23%) of the respondents with fever reported to self-medication.

Around 28% of the respondents with fever underwent blood testing, less than half of whom (44%) were tested within 24 hours. Elderly age group, females, those with poor knowledge about malaria and those residing in non-Regional Artemisinin Resistance

Initiative townships were associated with poor treatment-seeking behaviour in case of fever.

Although there is fair knowledge on mosquito bite as a mode of transmission and prevention of malaria, there are some misconceptions about transmission of malaria. Those having poor knowledge about malaria have poor treatment-seeking behaviour. A considerable number of respondents seek care from informal care providers and seek care late. Thus, there is a need to promote awareness about the role of early diagnosis and appropriate treatment and address misconceptions about transmission of malaria.

Reference: *Phyo Aung Naing, Thae Maung Maung, Tripathy JP, et. al.* Tropical Medicine and Health. 2017, 45:31.

News about Medicine & Health

Silencing 'Junk' Gene could Halt Tumor Growth

After investigating unexplored regions of the human genome, researchers have discovered a new non-coding gene that appears to play an important role in cancer development. What was previously thought to be junk DNA turns out to be important in the development of cancer.

The gene is in an area of the genome that does not contain instructions for making proteins. At one time, it was thought that this non-coding area was just irrelevant "junk." However, as technology has advanced, more and more genes are being found in this "dark matter" that are proving to be significant for health and disease. In a paper published in the Journal Cell, scientists from the University of Michigan Comprehensive Cancer Center in Ann Arbor reports that while the new gene does not code for a protein, it has a "direct impact" on cancer cells. They found that silencing it stopped tumors from growing.

For a long time, it was believed that the large part of the genome that does not contain instructions for making proteins was junk DNA. These so-called non-coding genes were also referred to as dark matter because so little was known about them. But as sequencing technology has become more advanced, scientists have discovered that while the dark matter part of the genome may not ultimately yield proteins, it does produce non-coding RNAs that play an important role in the cell biology of health and disease. Over the past 20 years, many new classes of non-coding RNAs have been found, including one called long non-coding RNA (lncRNA), which is a strand of RNA that has more than 200 building blocks, or nucleotides. In the new study report, the researchers describe how they found and characterized a lncRNA that they discovered to be the same in zebrafish, mice, and humans. This raised their curiosity because it is rare to find this type of RNA "conserved" across different species. Could this mean that it played a fundamental role in cell biology? They named the lncRNA "Testis-associated Highly-conserved Oncogenic long non-coding RNA" (THOR).

Senior study author Arul Chinnaiyan, a Professor of Pathology at Michigan Medicine, says that they decided to focus on THOR because it appeared to have "been selected by evolution for having important functions."

What the researchers discovered was that the highly conserved lncRNA is important for cancer development, and that silencing it stopped tumors from growing. In previous work, they had already identified thousands of potential lncRNAs that might be useful to study further after mapping the landscape of the dark matter.

They chose to study THOR for two reasons: firstly, because it was "evolutionarily highly conserved," and secondly, because it was highly expressed only in one type of normal adult tissue: the testes.

Because THOR is highly conserved in zebrafish as well as humans and mice, they were able to study how it works in zebrafish models, says Prof. Chinnaiyan. But as they investigated THOR further, they found that it was also highly expressed in some cancers, particularly melanoma and lung cancer, and that it played a direct role in cancer development.

Experiments using laboratory-grown cancer cells expressing THOR showed that silencing the gene slowed tumor growth, and that overexpressing it speeded it up. Also, normal cells lacking THOR developed normally, suggesting that it only has an effect on cancer cells. Prof. Chinnaiyan says that they went through "a lot of lncRNAs," and most of them did not show such a clear function as THOR.

In further experiments, the team found that THOR interacts with insulin-like growth factor-binding proteins (IGFBPs), which are thought to help keep RNAs stable. They found that silencing THOR blocked the activity of IGFBPs. If THOR function is perturbed, the ability to stabilize RNA is disturbed and this inhibits cell proliferation.

The researchers also found that overexpressing THOR caused cells to grow faster. They suggest that THOR might serve as a target for cancer drugs because inhibiting it does not interfere with healthy cells.

Source: https://www.medicalnewstoday.com.
Contributed by Clinical Research Division

Higher Coffee Consumption Associated with Lower Risk of Early Death

Higher coffee consumption is associated with a lower risk of death, according to research presented today at ESC Congress. "Coffee is one of the most widely consumed beverages around the world," said Dr. Adela Navarro, a cardiologist at Hospital de Navarra, Pamplona, Spain. "Previous studies have suggested that drinking coffee might be inversely associated with all-cause mortality but this has not been investigated in a Mediterranean country."

The purpose of this study was to examine the association between coffee consumption and the risk of mortality in a middle-aged Mediterranean cohort. The study was conducted within the framework of the Seguimiento Universidad de Navarra (SUN) Project, a long-term prospective cohort study in more than 22,500 Spanish university graduates which started in 1999.

This analysis included 19,896 participants of the SUN Project, whose average age at enrollment was 37.7 years old. On entering the study, participants completed a previously validated semi-quantitative food frequency questionnaire to collect information on coffee consumption, lifestyle and sociodemographic characteristics, anthropometric measurements, and previous health conditions.

Patients were followed-up for an average of ten years. Information on mortality was obtained from study participants and their families, postal authorities, and the National Death Index. Cox regression models were used to estimate hazard ratios (HR) and 95% confidence intervals (CI) for incident mortality according to baseline total coffee consumption adjusted for potential confounders.

During the ten year period, 337 participants died. The researchers found that participants who consumed at least four cups of coffee per day had a 64% lower risk of all-cause mortality than those who never or almost never consumed coffee (adjusted HR, 0.36; 95% CI, 0.19-0.70). There was a 22% lower risk of all-cause mortality for each two additional cups of coffee per day (adjusted HR, 0.78; 95% CI, 0.66-0.92).

The researchers examined whether sex, age or adherence to the Mediterranean diet had any influence on the association between baseline coffee consumption and mortality. They observed a significant interaction between coffee consumption and age (p for interaction=0.0016). In those who were at least 45 years old, drinking two additional cups of coffee per day was associated with a 30% lower risk of mortality during follow-up (adjusted HR, 0.70; 95% CI, 0.58-0.85).

Dr Navarro said: "In the SUN project we found an inverse association between drinking coffee and the risk of all-cause mortality, particularly in people aged 45 years and above.

This may be due to a stronger protective association among older participants. She concluded: "Our findings suggest that drinking four cups of coffee each day can be part of a healthy diet in healthy people."

Source: www.sciencedaily.com.
Contributed by Bioinformatics Division

Iron Absorption Better with Alternate-day Dosing

Women with iron deficiency absorb iron supplements more efficiently when taking them every other day, compared to daily, according to new findings published in The Lancet Haematology. “In contrast with most current recommendations on iron supplementation, our findings indicate that providing oral iron on alternate days in single morning doses increases iron absorption in young women and is an effective regimen to optimize iron absorption,” Dr. Michael B. Zimmermann of ETH Zurich in Switzerland told Reuters Health by email. “This regimen not only improves iron absorption but also, because of its simplicity, might increase compliance.” At present, guidelines recommend women who require iron supplementation take them in two or three split doses through-out the day, every day, based on the assumption that this will improve iron absorption and be more tolerable for the patient.

However, Dr. Zimmermann and his team note in their October 9 report, there is no evidence to support this approach. The researchers previously found that when two doses of iron were given daily, fractional absorption worsened with the second dose. Patients given two doses a day also had higher levels of hepcidin than those who took a single dose daily. The new study consisted of two open-label randomized trials. In the first trial, 40 women were randomly assigned to take 60 mg of iron daily for 14 days or 60 mg every other day for 28 days. In the second trial, 20 women were randomized to receive 120 mg of iron at 8 a.m. once a day or two doses of 60 mg at 8 a.m. and 5 p.m. for three days in a row. Fourteen days later, study participants crossed over to the other treatment.

The researchers used radiolabeled ferrous sulfate to measure iron absorption. In study 1, cumulative fractional iron absorption was 16.3% for the consecutive-day group and 21.8% for the alternate-day group, while cumulative total iron absorption was 131.0 mg versus 175.3 mg, respectively. Hepcidin levels were higher in the consecutive-day group. All of these differences were statistically significant. In study 2, iron absorption was similar with the once-

daily and twice-daily dosing, at 11.8% and 13.1%, respectively. Total iron absorption was 44.3 mg with once - daily dosing and 49.4 mg with twice - daily dosing, not a statistically significant difference. Hepcidin concentrations were significantly higher with twice-daily dosing.

All adverse events reported were grade 1 or 2. In study 1, nausea and abdominal pain were 33% higher with consecutive-day dosing, but the difference did not reach statistical significance. "Alternate-day oral supplementation with 60 mg iron results in 34% higher iron absorption than with consecutive-day supplementation," Dr. Zimmermann said. "Splitting a single oral dose of 120 mg iron into two daily doses of 60 mg iron does not improve iron absorption, so the iron can be given in a single dose in the morning." "After 350 years of oral iron being used with poor adherence and poor results, we finally have evidence that the way it's been given may have been sub-optimal or even imprudent, and a new paradigm for the use of oral iron may be upon us," Dr. Michael Auerbach of Georgetown University School of Medicine in Washington, DC, who co-authored an accompanying editorial, told Reuters Health in a telephone interview. The findings are physiologically plausible, Dr. Auerbach added, given that hepcidin goes up everytime a person takes iron, which reduces absorption of subsequent doses.

Source: https://www.medscape.com/viewarticle/887227.
Contributed by Pathology Research Division

Scrub Typhus: An Emerging and Re-emerging Metazoonosis

Metazoonosis is defined as disease that is transmitted biologically by invertebrate vector such as mosquito, tick, mite, sand fly, rat flea, tsetse fly and the agent develops, multiplies of both in vectors before transmission. Among many metazonoses, Scrub typhus (chiggar borne rickettsiosis, Japanese fever, mite borne typhus fever, rural typhus, tropical typhus, Tsutsugamushi disease) is an important emerging and re-emerging vector borne metazoonosis, which is caused by Orientia (Rickettsia) tsutsugamushi, an obligate, intracellular rickettsial organism.

The disease was observed for the first time in 1899 from Japan and named as Tsutsugamushi (tsutsuga means dangerous and mushi means insect or mite). Later, it was reported from Australia, India, Indonesia, Korea, Malaysia, Myanmar, Nepal, Pakistan, Russia, Sri Lanka, and Thailand. In India, scrub typhus is prevalent in many states such as Sikkim, Assam, Himachal Pradesh, Manipur, Meghalaya, Jammu Kashmir, Nagaland, Uttrakhand, Kerala, Orissa, West Bengal, Chhattisgarh, Maharashtra, Andhra Pradesh, Rajasthan, Haryana, and Delhi. Scrub typhus is a re-emerging disease in Indian sub-continent.

The resurgence of disease is attributed due to several factors such as deforestation, unplanned urbanization, rapid industrialization, poor sanitation, and increased transportation. It is estimated that 3914 cases of scrub typhus occured in Thailand during 2000. Currently, one billion people are at risk of getting scrub typhus and about one million cases are reported every year. The case fatality used to be as high as 60% before the advent of antibiotics.

The outbreaks of scrub typhus are usually observed during rainy season; however, outbreaks in cooler months are recorded from Southern India. Scrub typhus is an occupational zoonosis of forest workers, joggers, campers, gardeners, and farmers. Human is an accidental host and acquires the infection by the bite of infected larval mite (chigger) of the genus Leptotrombidium. The adult mite does not attack on humans and feeds only on plants. The incubation period of scrub typhus is 1 to 3 weeks. Most patients develop a characteristic eschar at the site of the chigger bite. The bites are mostly seen on neck, axilla, groin and genitalia. The patient exhibits signs of fever, headache, sweating, chills, vomiting, abdominal cramps, myalgia, fatigue, cough, pneumonia, deafness, conjunctivitis, lymphadenopathy, and cutaneous rash. The absence of eschar presents a challenge to the clinician in diagnosis. However, a number of laboratory techniques such as microbiological, immunological and molecular are employed to confirm the diagnosis of scrub typhus. The organism can be cultivated on L929 cells and can be stained with Giemsa technique. The isolation of pathogen from clinical specimens is tedious and time consuming and requires BSL3+facility in the laboratory. Hence, indirect immunofluorescence assay is considered the mainstay for serodiagnosis of disease. Among the molecular tools, real time PCR and nested PCR are rapid and sensitive tests but are not easily available in most of public health laboratories.

A number of drugs such as azithromycin, chloramphenicol, doxycycline and minocycline are available for the management of disease. Doxycycline is most widely used as therapeutic agent. In certain areas where doxycycline alone does not show good clinical response, combined therapy with doxyxycline and rifampicin can be used. Since doxycycline is contradicted in children, chloramphenicol can be safely tried in children and pregnant women. In untreated patients, death may occur due to cardiac failure, meningitis and pneumonia. Currently, no comercially produced vaccine is available to immunize the susceptible population in endemic regions of the world. The eradication of scrub typhus seems unfeasible in the absence of potent vaccine that can induce lifelong immunity. Therefore, early diagnosis and prompt

specific therapy, wearing of protective clothing, use of repellent cream on exposed parts of body, clearing of vegetation, application of acaricides such as lindane in high risk areas, rodent control and public health education will certainly mitigate the problem of scrub typhus.

It is pertinent to mention that persons visiting hyper endemic areas should take doxycycline 200 mg capsule daily for one week as a prophylaxis to protect from infection. It is emphasized that persons in endemic areas with fever and history of bite from mite should be thoroughly investigated for scrub typhus.

Source: http://madridge.org/journal-of-immunology/MJIM-2017-105.php.

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ဆေးသုတေသနဦးစီးဌာနမှ ကျန်းမာရေးဝန်ဆောင်မှုအစီအစဉ်

- ဆေးသုတေသနဦးစီးဌာနမှ သုတေသနပညာရှင်များနှင့် ကုသရေးဦးစီးဌာန၊ ဗဟိုအမျိုးသမီးဆေးရုံကြီးမှ သားဖွားမီးယပ်အထူးကုဆရာဝန်ကြီးများ ပူးပေါင်းဆောင်ရွက်သော **"သားအိမ်ခေါင်းကင်ဆာစမ်းသပ်ဖော်ထုတ်သည့်ဆေးခန်း"** ကို ဆေးသုတေသနဦးစီးဌာနတွင် ဖွင့်လှစ်၍ စမ်းသပ်စစ်ဆေးလိုသူအမျိုးသမီးများကို အင်္ဂါနေ့ နှင့် သောကြာနေ့ နံနက် ၁၀နာရီ မှ ၁၂ နာရီအတွင်း အခမဲ့စစ်ဆေးပေးလျက်ရှိပါသည်။
- ဆေးသုတေသနဦးစီးဌာန "**မျိုးဆက်ပွားကျန်းမာရေးအမေးအဖြေ**" သီးသန့် တယ်လီဖုန်းလိုင်း (၀၉-၇၃၂၅၀၄၉၉) ကိုဖွင့်လှစ်ထားပါသဖြင့် မည်သူမဆို မျိုးဆက်ပွားကျန်းမာရေးနှင့်ပတ်သက်၍ သိလိုသည်များ မေးမြန်းလိုပါက ရုံးဖွင့်ရက်များတွင် နံနက် ၁၀ နာရီ မှ ၃ နာရီအတွင်း မေးမြန်းနိုင်ပါသည်။

သို့

ကျန်းမာရေးနှင့်အားကစားဝန်ကြီးဌာနမှဝန်ထမ်းများအားဖြန့် ဝေပေးပါရန်မေတ္တာရပ်ခံအပ်ပါသည်။