Botswana's Premier Health Journal

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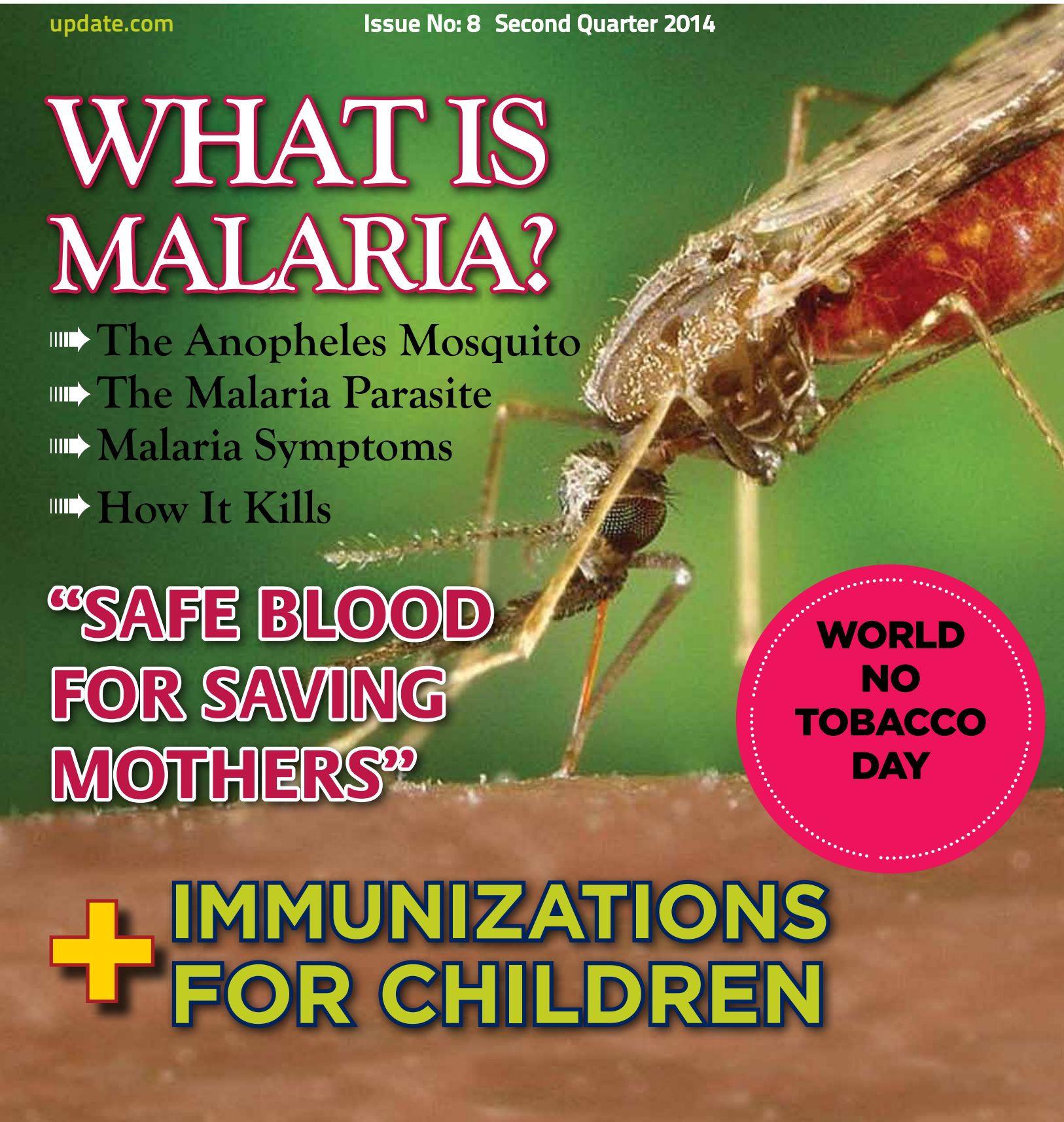

WHAT IS MALARIA?

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WORLD NO TOBACCO DAY

+ IMMUNIZATIONS FOR CHILDREN

COVER IMAGE: anopheles mosquito

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Dear Reader,

One of the great aspects of this job is having the opportunity to talk with and listen to the many different manufacturers, distributors, and of course the huge network of dealers that is the backbone of our industry.

Years ago I never would have ever imagined I would be in this position, and it is amazing. To say I really enjoy this job is an understatement.

What makes Diagnostics Update.com so unique is their informative and educative ways to the nation.

The staff and management is always looking for ways to inform there readers on how to tackle different medical issues. Basically, you want more people to enjoy reading more and more.

That said, there is still the need to get more readers to embrace healthy routines within and outside the homestead. This October/November/December issue we focus more on the winter/spring season ailments. We take a look at different ways to keep healthy.

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IMMUNIZATIONS FOR CHILDREN:
What You Need To Know

Immunizations are designed to protect against serious illnesses ranging from polio and tetanus to measles, mumps, and the seasonal flu. Many people consider them the most important part of well-child checkups.

How immunizations work

Immunizations are vaccines made of either weakened or killed versions of the bacteria or virus that causes a particular disease. When these altered viruses and bacteria are injected or taken orally, the immune system mounts an attack that stimulates the body to produce antibodies.

Once produced, the antibodies remain active in the body, ready to fight off the real disease. For example, if whooping cough broke out in your area, an immunized child would be much less likely to contract the disease than one who wasn't immunized.

2014 immunization schedule

Family Physicians: If your child is behind on immunizations, ask your doctor about the "catch-up" schedule.

DTaP, to protect against diphtheria, tetanus, and pertussis (whooping cough): At 2 months; At 4 months; At 6 months; Between 15 and 18 months (can be given as early as 12 months as long as it's at least six months after the previous shot) Between 4 and 6 years old.

A booster shot at 11 or 12 years of age (called the Tdap) Hepatitis A, to protect against hepatitis A, which can cause hepatitis. Between 12 and 23 months, two shots, six to 18 months apart Hepatitis B, to protect against hepatitis B, which can cause hepatitis.

At birth; Between 1 and 2 months; Between 6 and 18 months; Hib, to protect against Haemophilus influenza; type B, which can lead to meningitis, pneumonia, and epiglottitis: At 2 months; At 4 months; At 6 months (not needed if the PedvaxHIB or Comvax brand of vaccine was given at 2 and 4 months),

Between 11 and 12 years A booster shot at 16 years of age MMR, to protect against measles, mumps, and rubella (German measles): Between 12 and 15 months Between 4 and 6 years old Pneumococcal (PCV), to protect against pneumococcal disease, which can lead to meningitis, pneumonia, and ear infections: At 2 months At 4 months At 6 months Between 12 and 15 months Polio (IPV), to protect against polio: At 2 months At 4 months Between 6 and 18 months Between 4 and 6 years old Rotavirus, (given orally, not as an injection) to protect against rotavirus, which can cause severe diarrhea, vomiting, fever, and dehydration: At 2 months At 4 months. At 6 months (not needed if the Rotarix brand of vaccine was given at 2 and 4 months) Varicella, to protect against chicken pox: Between 12 and 15 months Between 4 and 6 years.

10 Best Foods to Fight Off Your Spring Cold and Flu

You probably know that washing your hands regularly and getting enough sleep is important when it comes to warding off bugs, but did you know that what you eat can also play a key role in boosting your immunity? SELF's nutrition director gives us the skinny on what to munch on to stay healthy this season.

Skimmed milk:

Deficient in vitamin D, which is found in fortified milk, yet this nutrient is key to defending against germs:

If your D levels are low, your white blood cells won't be able to react to or ward off infections effectively. Aim to get 600 international units a day. Great sources include fortified milk, orange juice and yogurt, as well as egg yolks and wild salmon.

Red Bell Pepper:

You probably think of citrus fruits when it comes to getting more immune-boosting vitamin C, and it's true they're a good source of the nutrient. But surprise—red bell peppers have almost three times the C of an orange!

In fact, just half of one pepper will deliver the recommended 75 milligrams per day for women ages 19 and up (guys, take an extra bite or two—you need 90 mg a day). Dip pepper slices in hummus for an afternoon snack or toss it in a stir-fry for dinner.

Tea:

Wake up to a steaming mug of tea to ramp up your body's defenses against infection:

And green tea, specifically, contains an antioxidant compound called EGCG which works with your immune system to ease inflammation. Add a squirt of lemon to up the ante. The juice contains quercetin, which also has anti-inflammatory powers.

Yogurt:

Probiotics, the healthy bacteria in yogurt, have been linked to strong immune systems and a lower risk for gum disease and even some cancers. But not all yogurts have enough of the good stuff. The National Yogurt Association's Live & Active Cultures seal appears on some cartons that do (such as Yoplait). Add honey for a lift. It contains prebiotics, a carb that helps yogurt's bugs thrive.

Goat cheese:

This creamy spread contains copper, which helps keep your immune system humming. Plus it's packed with flavor, so a little goes a long way without adding unwanted calories to your meal or snack (an ounce contains only 76 calories and 4 grams of saturated fat). Try swapping out mayo in favor of a smear goat cheese on a sandwich or wrap, or mix the cheese with chopped nuts and dried fruit for a filling toast topper.

Blueberries:

All berries are good for you, but those with a blue hue are among the best of the bunch. They have the highest levels of disease-fighting antioxidants of all commonly consumed fruit. The vitamin C in blueberries also blunts the effects of stress by reducing free radicals and bolstering your immune system.

Pumpkin Seeds:

This tasty snack has zinc, a mineral that jacks up the immune system by inhibiting viral replication. The seeds have also been shown to reduce the duration of cold symptoms. But know that too much zinc can suppress your immune system, so stick with the recommended daily intake:

Women ages 19 and up need 8 mg a day; men need 11 mg. For their part, pumpkin seeds have about 2 grams per ounce (142 seeds); try them on your yogurt or oatmeal for a little crunch or add them to a healthy trail mix.

Mushrooms:

You already know that eating any fruit or vegetable regularly is a good thing for your health, but when it comes to germ defense, mushrooms have an edge. Any type will do the trick, but if you're still looking to up your intake for immunity-strengthening vitamin D, button mushrooms are a potent source.

Broccoli:

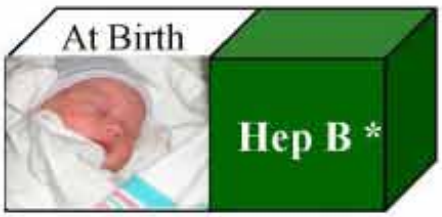
Chewing the veggie triggers the release of chemicals, possibly helping your body regulate infection-fighting white blood cells. Cooking reduces the dose, so it's best to eat them raw.

Pasta:

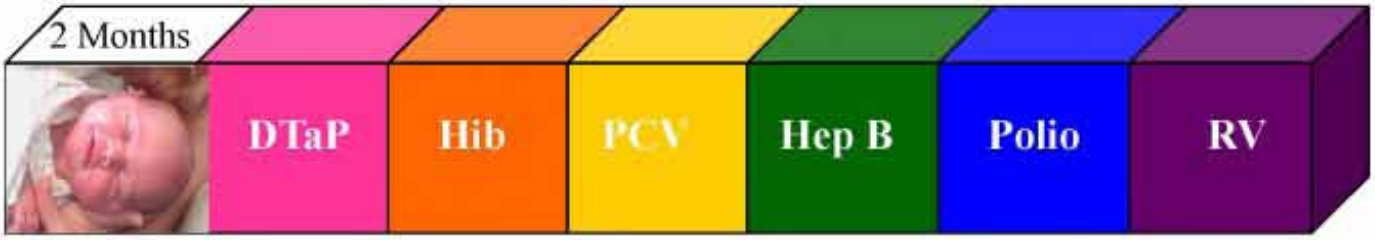
Skimping on carbs or fat?

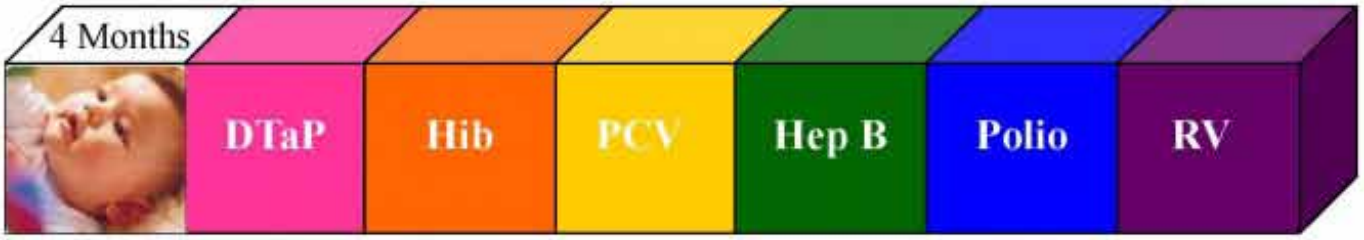
Some people on plans that severely limited carbs or fat missed out on vital nutrients like iron and zinc that help maintain immunity and energy.

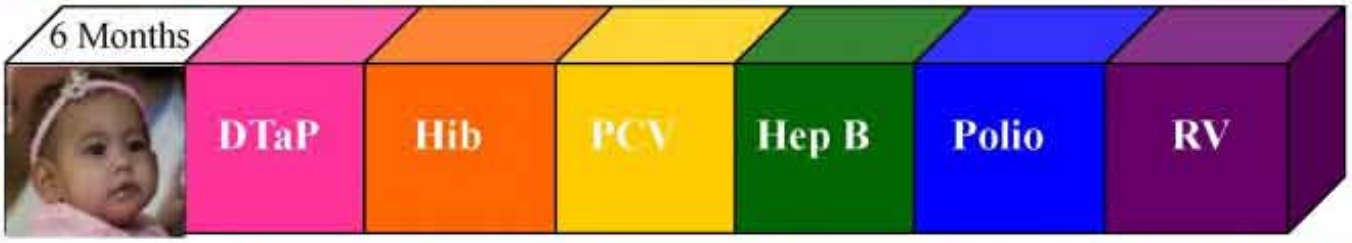
Immunization Timing Schedule

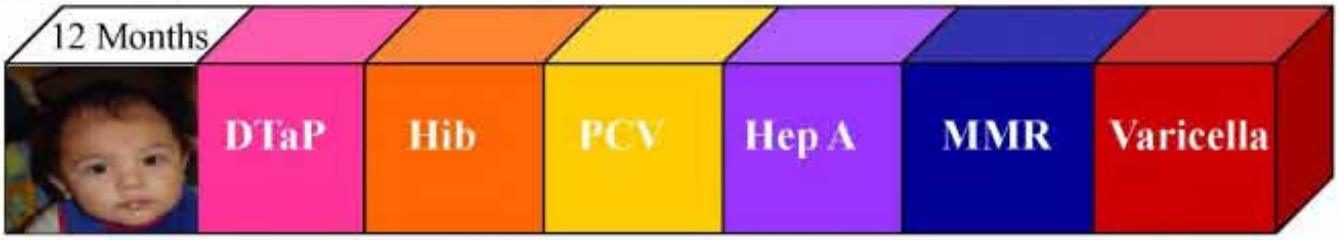


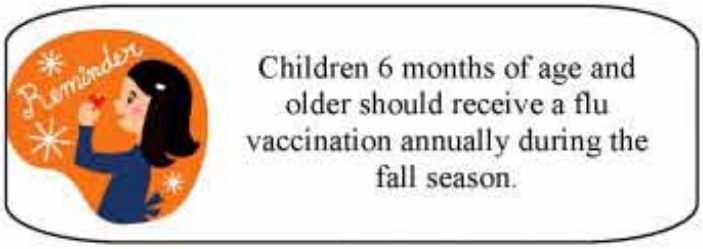
*** If the birth dose of Hep B is given, the 4 month dose may be omitted.**











*Please see other side for description of immunizations and contact information.

MONTANA
Department of Public Health & Human Services

Montana's Immunization Schedule is compatible with the current recommendations of the Advisory Committee on Immunization Practices (ACIP) of the Centers for Disease Control and Prevention (CDC), the American Academy of Pediatrics, and the American Academy of Family Physicians. For more information, including the minimum intervals between doses, please visit the Montana's Immunization Program's website at www.immunization.mt.gov or call (406) 444-5580.

WHAT IS MALARIA?

Anopheles Mosquito

MALARIA is a disease of the BLOOD that is caused by the Plasmodium PARASITE, which is transmitted from PERSON to PERSON by a particular type of mosquito.

THE ANOPHELES MOSQUITO

The female Anopheles mosquito is the only mosquito that transmits malaria. She primarily bites between the hours of 9pm and 5am, which is why sleeping under a mosquito net at night is such an important method of prevention.

THE MALARIA PARASITE

There are more than 100 species of malaria parasite. The most deadly and most common in Africa - is known as Plasmodium falciparum.

Once the parasite enters the human body, it lodges itself in the liver where it multiplies approximately 10,000 times. Two weeks after entering the body, the parasite bursts into the blood stream where it begins infecting red blood cells.

MALARIA SYMPTOMS

Symptoms begin 10 days to 4 weeks after infection, although a person may feel ill as early as 7 days later. Symptoms include fever, headache and vomiting.

HOW IT KILLS

If drugs are not available or if the parasites are resistant to them, malaria infection can develop to anemia, hypoglycemia or cerebral malaria, in which capillaries carrying blood to the brain are blocked. Cerebral malaria can cause coma, lifelong-learning disabilities, and death.

TRAVELERS AND MALARIA

Malaria was eliminated in the U.S. in 1951, however, 1,500 cases are still diagnosed here annually, caused by returning travelers. If traveling to a malaria-risk country, consult your health-care provider on appropriate malaria prevention interventions, like antimalarial drugs.Travelers that become ill with flu-like symptoms, either while traveling in a malaria-risk area or after returning home, should seek immediate medical attention and share their travel history.

THE LABORATORY DIAGNOSIS OF MALARIA

INTRODUCTION

Malaria is one of the major diseases causing death in tropical and sub-tropical countries. Annually over 1 million people die globally with 90% of deaths occurring in children. Due to an increase in the number of Malaria cases, prompt and effective diagnostic methods are essential for the management and control of Malaria.

Sometimes called "King of Diseases", Malaria is caused by protozoan parasites belonging to the genus Plasmodium which are transmitted from person to person by the female Anopheles mosquito.

Whilst several species cause varying forms of Malaria, Plasmodium falciparum is responsible for the most serious and fatal type of Malaria. Though the other human species of Malaria parasite, Plasmodium vivax, Plasmodium ovale, Plasmodium malariae, and Plasmodium knowlesi can cause acute and severe illness, death rates are low in this group compared to Plasmodium falciparum.

Worldwide Malaria cases are increasing due to declining Malaria control, emergence of drug resistant strains of Malaria parasites, and frequency in travel and migration.

DIAGNOSIS OF MALARIA

Effective diagnosis of Malaria is essential since it reduces both complications and mortality from Malaria and is central to the effective management of Malaria.

However, differentiation of clinical Malaria from other tropical infections based on patients' signs and symptoms or doctors' findings may be challenging.

Since Malaria is a potential medical emergency, it must be treated timely. Delays in diagnosis and treatment are the major causes of death in most cases.
Laboratory Malaria diagnosis involves identifying Malaria parasites or antigens/ products in patient blood.

CLINICAL DIAGNOSIS OF MALARIA

Clinical diagnosis of Malaria is common among doctors. It is widely practised and least expensive.

Doctors base clinical diagnosis on patients' signs and symptoms including physical findings upon examination. The early symptoms of Malaria are widely nonspecific and variable. They include fever, headache, diarrhoea, nausea, vomiting, anorexia, and pruritis.
Because signs and symptoms of malaria are nonspecific, they overlap considerably with other common life threatening diseases such as viral or bacterial infections.

This impairs the diagnostic specificity of Malaria and can promote the indiscriminate use of antimalarial drugs compromising the quality of care for patients with non-malarial fevers.

Eventually the nonspecific nature of clinical signs and symptoms of Malaria may lead to the over-treatment of Malaria whilst ignoring the underlying non-malarial fevers.

LABORATORY DIAGNOSIS OF MALARIA

In the laboratory, Malaria is diagnosed using various techniques, e.g. conventional microscopic diagnosis by staining thin and thick peripheral blood smears, concentration techniques, e.g. quantitative buffy coat (QBC) method, rapid diagnostic tests e.g. ICT,

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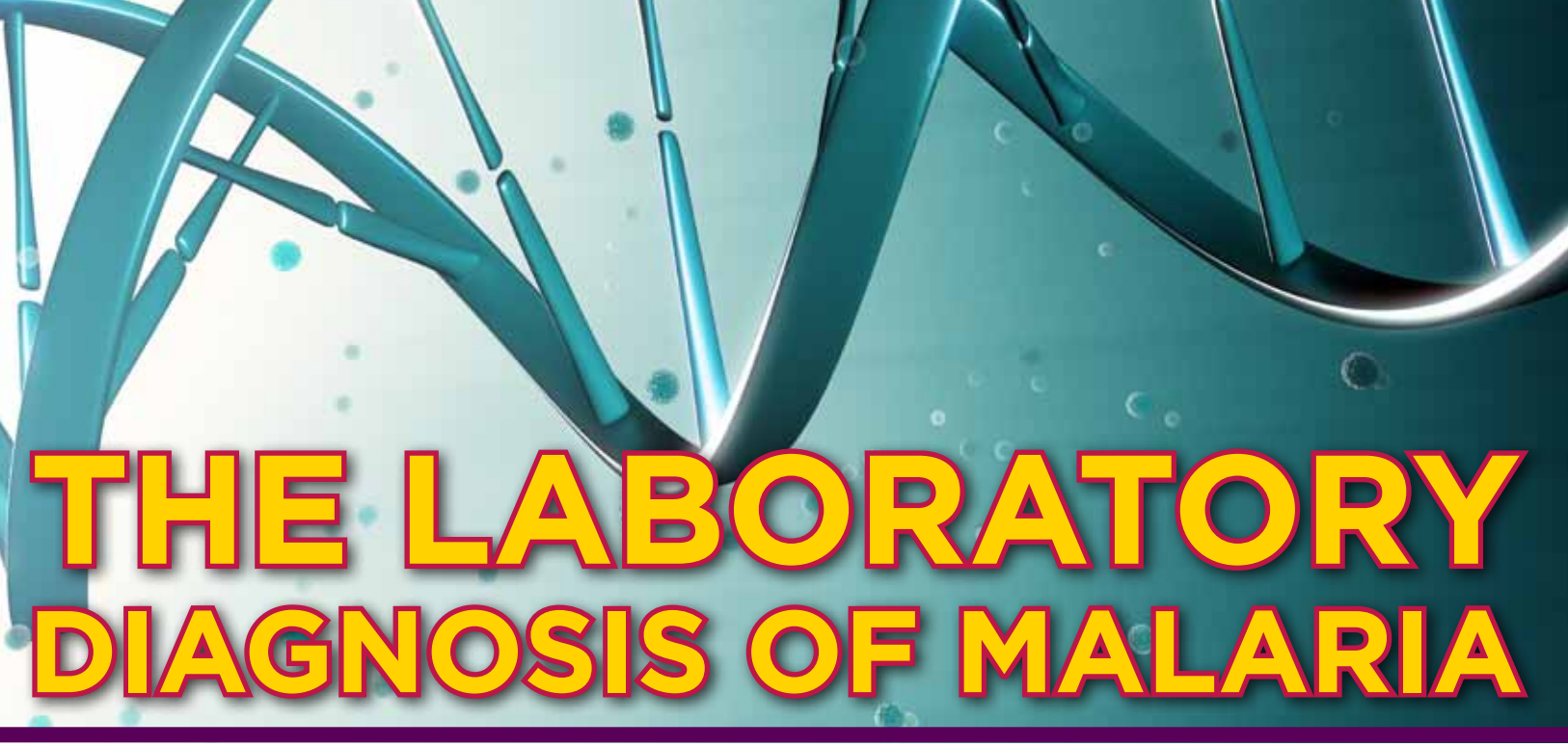

THE LABORATORY DIAGNOSIS OF MALARIA

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OptiMAL, Para-HIT-f, SD Bioline, ParaSCreen, and molecular diagnostic methods , such as polymerase chain reaction (PCR).

(a) Microscopical diagnosis of Malaria using thick and thin Peripheral Blood Smears (PBS)

Conventionally, Malaria is diagnosed by microscopic examination of stained blood films using Giemsa, Field's, or Wright's stains.

Discovered in the 18th century, microscopic detection and identification of Plasmodium species in Giemsa stained thick blood films (for screening malaria parasites) and thin blood films (for species' confirmation) remains the gold standard for laboratory diagnosis of Malaria.

Patients' blood can be collected in two ways. In the first method the patient's finger is cleaned with 70% ethyl alcohol before pricking the fingertip with a sharp sterile lancet and then placing two drops of blood on a glass slide.

In the second method, blood is collected by the ordinary venipuncture method into an appropriate specimen container with two drops of blood being placed on a glass slide using a capillary tube in the laboratory.

The wide use of this technique by laboratories around the world has been attributed to its simplicity, low cost, its ability to identify the presence of parasites and their species and, and its ability to assess parasite density. This gives way for proper management of Malaria.

(b) Rapid diagnostic tests (RDTs)

These were developed in response to a rising need for new, simple, quick, accurate, and cost effective, diagnostic tests for determining the presence of Malaria parasites.

Complimenting the efforts of microscopic methods, RDTs detect Malaria antigen in blood flowing along a membrane containing specific anti-malaria antibodies. Unlike the light microscopy, RDTs do not need electricity and laboratory equipment allowing the technique to be used even in rural areas.

(c) Serological tests for Malaria

Malaria diagnosis using serological tests is based on the detection of antibodies against asexual blood stage Malaria parasites. The most common form of serological techiniques is the Immunoflourescence antibody testing (IFA). IFA is based on the principle that, following infection with any Plasmodium species, specific antibodies are produced within 2 weeks of initial infection and persist for 3-6 months after parasite clearance. These antibodies are then detected and quantified through the use of a specific antigen coated on a slide. IFA is ideal for epidemiological studies and screening potential donors.

(d) Molecular diagnosis of Malaria

Polymerase chain reaction (PCR) based techniques have been shown to be more sensitive and specific than the microscopic methods as they are able to detect as few as 1-5 parasites per micro-litre of blood compared to at least 50 parasites for microscopic methods. Furthermore, PCR can detect drug resistant parasites and mixed infections. This allows the method to be used for confirming Malaria infection, follow-up therapeutic response, and identify drug resistance. However PCR techniques are very expensive hence a few people can afford them.

Other less common methods for Malaria diagnosis are flow cytometry, automated blood cell counters (ACC), mass spectrophotometry, enzyme linked immunosorbent assay (ELISA), latex agglutination, and cultivation of live Malaria parasites.

CONCLUSION

Microscopic examination of peripheral thick and thin blood films remains the preferred method for Malaria diagnosis because the method is cheap and reliable.

The other recent technological advances for Malaria detection are more expensive and ideal for other uses like epidemiological studies, research and identifying drug resistance.

By Emmanuel Anesu Gwenukwenu

Sourced from the Korean Journal of Parasitology, Malaria Diagnosis: A Brief Review Article written by N. Tangpukdee; C. Duangdee; P. Wilairatana; S. Krudsood

Article evaluated by:

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WORLD NO TOBACCO DAY

World No Tobacco Day is a global campaign coordinated by the World Health Organization (WHO), and observed on 31 May each year.

World No Tobacco Day is an opportunity to highlight the health risks associated with tobacco use and help reduce tobacco consumption.

Tobacco kills nearly six million people around the world each year, of which more than 600000 are non-smokers dying from breathing secondhand smoke.

Tobacco use is the single most preventable cause of death globally and is currently responsible for 10% of adult deaths worldwide. (**Source: WHO)**

Key facts about tobacco use in Australia:
Around 2.8 million (or 16.1%) Australians smoke daily (18 years and older).

More men (18%) than women (14%) smoke.

Smoking claims the lives of 15,000 Australians every year.

Smoking tobacco is recognised as one of the largest preventable causes of death and disease in Australia. It is never too late to quit. Stopping smoking at ages 60, 50, 40 or 30 can result in gains, respectively, of about three, six, nine, or 10 years of life expectancy. A pack-a-day smoker can now save as much as $AUD 7,000 in a year by quitting.

Quit on World No Tobacco Day, a pack-a-day smoker could save as much as $AUD 4,000 by Christmas. The National Tobacco Campaign's July 2013 survey found the following results: 92% of smokers thought they would benefit financially from quitting in the next six months Health 79% thought smoking had already damaged their health 95% of smokers felt their health would benefit from quitting 86% of smokers had some intention of quitting 36% smoked to cope with stress and 30% smoked out of habit.

Smoker attitudes 68% of smokers agreed that smoking is widely disapproved of in Australia. 74% of smokers said they were eager for a life without smoking.

40% smokers reported that no-one had encouraged them to quit in the last six months 40% of smokers have smoked in front of children.

Quitting assistance
Talk to a General Practitioner, pharmacist or call the Quitline 13 7848 Download the free My QuitBuddy from AppStore, Google Play or Windows Phone Store. Quit Now Savings Calculator and other resources on www.quitnow.gov.au

More facts and figures can be found in the Australian National Preventive Health Agency's State of Preventive Health 2013 report and in the National Tobacco Campaign's evaluation report September 2013: The National Partnership Agreement on Preventive Health: Tobacco Social Marketing Campaign.

LABORATORY TEST FOR THE FLU

Laboratory tests can be divided into three main categories: screening, diagnostic and therapeutic. Screening tests are those that are performed to screen a patient, or a group of patients, for a particular disease.

Physician office laboratories and emergency department staff usually perform these tests, although some are also performed at health fairs and in other outpatient settings.

Diagnostic tests are usually more complex than screening tests, and they are performed at more advanced laboratories.

Have a question? Get an answer from a doctor now!

Screening for Influenza Infection
When a patient presents to a health care provider with flu-like symptoms (fever and cough and/or sore throat), the health care provider may want to test for influenza to rule it out as a diagnosis. A sample of the mucous membrane from the patient is taken with a swab.

Once at the lab, the sample is processed with chemicals to extract and expose the flu virus, if it is present. The solution containing the virus is then tested using antibodies against the flu.

Diagnostic tests are usually more accurate than screening tests. Therapeutic tests are performed in order to aid in the delivery of a treatment.

Depending on the test, if the flu virus is present on the sample, the antibodies will attach to it and cause a change in color or turbidity of the solution (a positive result). If there is no virus present, then there will be no reaction (a negative result).

Screening tests such as these can only detect the presence of the virus and whether it is type A or type B.
However, they are good tests for giving the provider a clue as to whether a patient has influenza or another respiratory condition, and the results are usually available in about 15 minutes.

Diagnostic Testing for Influenza
In order to test for the particular strain of influenza, a more complex test is used. At most large laboratories, this is the real-time PCR (polymerase chain reaction) test. The PCR test uses chemicals to open the virus and expose its RNA (genetic material).

Once exposed, the RNA is analyzed for sequences that serve as a "fingerprint" of the virus, telling the laboratory staff the type of virus and the strain when that fingerprint is compared to known fingerprints. Occasionally, the PCR method will yield positive results for influenza but no strain information.

When this happens, even more involved tests are done, such as growing the virus in a tissue culture and looking at it under the microscope.

Viruses for which no known fingerprint is available are usually called "novel" because they have not been detected before.

"SAFE BLOOD FOR SAVING MOTHERS"

19 May 2014 -- The focus for this year's campaign is "Safe blood for saving mothers". The campaign will increase awareness about why timely access to safe blood and blood products is essential for all countries as part of a comprehensive approach to prevent maternal deaths.

WHO encourages all countries, national and international partners working on blood transfusion and maternal health to develop an activity plan to highlight the need for timely access to safe blood and blood products in the prevention of maternal deaths.

Blood system strengthening

"The ministry of health (MoH) should provide effective leadership and governance in developing a national blood system that is fully integrated into the health-care system." A health system consists of all the organizations, institutions, resources and people whose primary purpose is to improve health.

Strengthening health systems means addressing key constraints including the constraints on a blood system that relate to availability, safety and quality of blood and blood products, universal access, self-sufficiency, community awareness and voluntary non-remunerated blood donation, donation testing, processing, clinical use of blood and blood products and transfusion practices, and haemovigilance, as well as health worker staffing, education and training, infrastructure, health commodities (such as equipment and consumables), logistics, tracking progress and effective financing.

The provision of an adequate supply of safe blood and blood products, and their safe and rational use is the responsibility of government and should be an integral part of each country's national health care policy and health care infrastructure.

The ministry of health should establish a sustainable national blood system which is recognized through a national blood policy, strategic plan and appropriate legal instruments.

Essential functions of a national blood system include policy formulation and standard setting, strategic and operational planning, provision of sufficient resources and national coordination and management to ensure an adequate supply of blood and blood products and safe clinical transfusion.

Quality systems for blood safety

"Quality systems are the key to ensuring the availability of safe blood for all patients needing transfusions" Blood transfusion is a multi-step process with risk of error in each process from selecting donors, collecting and processing donations, testing of donor and patient samples, issue of compatible blood, to transfusing the patient.

An effective quality system provides a framework within which activities are established, performed in a quality-focused way and continuously monitored to improve outcomes.

The risk associated with blood transfusion can be significantly reduced by the introduction of quality systems, external quality assessment and education and training for staff.

A quality system should cover all aspects of its activities and ensure traceability, from the recruitment and selection of blood donors to the transfusion of blood and blood products to patients. It should also reflect the structure, needs and capabilities of the blood transfusion service, as well as the needs of the hospitals and patients that it serves.

Key elements of quality systems include:

- **Organizational management;**
- **Standards;**
- **Documentation;**
- **Training;**
- **Assessment.**

Management commitment and support are essential for the development, implementation and monitoring of a national quality system in order to ensure continuous quality improvement. All staff should understand the

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"SAFE BLOOD FOR SAVING MOTHERS"

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importance of quality and the consequences of failure in the quality system.

Voluntary non-remunerated blood donation

Key resources:

- **Blood donor selection and counselling**
- **Towards 100% voluntary blood donation: a global framework for action**
- **Global consultation on 100% voluntary non-remunerated blood donation of Melbourne Declaration on voluntary blood donation**

The safest blood donors are voluntary, non-remunerated blood donors from low-risk populations. In the key global fact and figures in 2011 (Fact sheet number 279, in 62 countries, national blood supplies are based on 100% or almost 100% (more than 99.9%) voluntary unpaid blood donations.

Forty countries collect less than 25% of their blood supplies from voluntary unpaid blood donors. The World Health Organization's (WHO) goal is for all countries to obtain all blood supplies from voluntary unpaid donors by 2020 in accordance with World Health Assembly resolution 28.72, which was adopted in 1975.

IIn May 2005, at the Fifty-Eighth Session of the World Health Assembly, 192 Member States of the World Health Organization adopted resolution WHA58.13 to establish World Blood Donor Day as an annual event, to be celebrated each year on 14 June.

WHO, in collaboration with the INTERNATIONAL FEDERATION OF RED CROSS AND RED CRESCENT SOCIETIES. (IFRCRCS), the International Federation of Blood Donor Organizations (FIODS) and the International Society of Blood Transfusion (ISBT) sponsors World Blood Donor Day (WBDD) which is held on 14 June.

A global event is also held on 14 June each year to provide a focus for an international media campaign on World Blood Donor Day.

Club 25: reaching young blood donors

WHO, in collaboration with the International Federation of Red Cross and Red Crescent Societies (IFRCRCS), has played a leading role in promoting the wider application of the Pledge 25/Club 25 peer education and promotion programmes pioneered in Zimbabwe in which young people aged 18–25 pledge to give 20 donations of blood before the age of 25 and to lead healthy lifestyles to protect both themselves and the recipients of their blood from HIV and other infectious agents.

Testing of donated blood

The first step in reducing the risk of transmission of infectious diseases through blood is to select voluntary non-remunerated donors from low-risk populations who give blood on a regular basis as these individuals are at a lower risk of transmitting transfusion-transmissible infections than are family/replacement donors, or paid donors.

However, even with the most careful selection, some donors may be seropositive for HIV or other infectious agents. Therefore, rigorous screening of all donated blood is required to ensure the safety of the blood supply.

Finnish Red Cross

In the key global fact and figures in 2012 (Fact sheet number 279), in 39 countries, blood donations are still not routinely tested for transfusion-transmissible infections (TTIs) including HIV, hepatitis B, hepatitis C and syphilis; 47% of blood donations in low-income countries are tested in laboratories without quality assurance.

The donated blood should also be tested for ABO and RhD to ensure the safety and compatibility of the transfusion for the patient.

WHO encourages and supports countries, through provision of advice and training, in the development and implementation of these activities in accordance with their needs. The Diagnostics laboratory section covers these and other aspects of blood screening in more detail.

Processing of donated blood

91% of the blood collected in high-income countries, 72% of that in middle-income countries and 31% of that in low-income countries is separated into components.

Blood collected in an anticoagulant can be stored and transfused to a patient in an unmodified state. This is known as 'whole blood' transfusion.

However, blood may be used more effectively if component therapy is practiced. One unit of donated blood may be divided into components, including red cell concentrates, fresh frozen plasma, cryoprecipitate and platelet concentrates, to meet the needs of more than one patient.

For a safe and effective blood component processing, the following elements are required:

a) Commitment and support by national health authorities for a sustainable, well-organized, nationally co-ordinated blood transfusion service, with adequate resources and quality system for all areas;

b) Centralization of blood processing and testing within major centres to permit economies of scale by maximizing utilization of personnel and equipment and uniform standards;

c) Effective and timely testing of all donated blood to ensure maximum safety and availability of blood components;

d) Promotion of appropriate blood component therapy. Consideration should be given to the use of surplus plasma for the production of plasma-derived medicinal products through fractionation, utilizing facilities either within or outside the country.

To enquire about blood donation in Botswana
call 002673686700/ 002673901134 (between 07:30hrs and 16:00hrs Monday to Friday) or
e-mail to bloodservices@gov.co.bw

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