

DIAGNOSTICS

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**Carpal Tunnel
Syndrom**

**High Blood
Pressure**

Diabetes

Sports & Health

**Low Blood
Sugar**

Tooth Decay



Pathology you can trust!



Editor's Note



“Low 'Health Literacy' is Hazardous to Your Health.”

I saw this heading in one of the news stories and I was quite intrigued by the content of the story. A study published in *Annals of Internal Medicine* shows that people who have low “health literacy” tend to get sick more often, are hospitalized more frequently, have greater use of emergency room services, and tend to have double the mortality rate.

Health literacy is defined as the “capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.” Ninety percent of adults have trouble understanding the basic health related information available through healthcare facilities, community centres, and other outlets. This is a staggering statistic which easily translates into higher number of sick people and higher health costs, both to public and private sectors.

It is imperative for us as a nation to know more about health related issues, such as, the causes of most common ailments, the steps we can take to prevent them, the possible at home treatments that we have at our disposal, and when and where to go for medical interventions if it persists for too long. Parents must understand which childhood diseases are common, what their symptoms are and what to do if your child comes down with one of those diseases. We all must know about the effects of environment, weather, and general hygiene on our health and how to prevent common health problems and if we come down with something, how to go about dealing with it.

Same goes for adults and the elderly. There are certain issues that we all face at different stages of our lives; be it menopause, prostate issues,

diabetes, blood pressure, cancer, HIV/AIDS, or kidney and liver problems. It is better to have the proper knowledge of these issues and of the resources that are available to us, if and when we have to face them.

Many are not even aware of the fundamental causes of most diseases—germs—which include both bacteria and viruses. We must learn about how we come into contact with the germs, how to avoid them getting into our system, how to avoid transferring them to other people, and so on. Health literacy requires a concerted effort from each individual to be more aware of the workings of our bodies and what our bodies require to be healthy, to adopt healthy behaviours, and to act on health alerts.

Health literacy also depends on the ability of some healthcare providers to communicate properly with their patients. This not only includes the use of proper language and reduction of jargon in the information to a more understandable terminology, but also cultural issues that play a big part in how people perceive certain information. In other words, health literacy is a two way channel. Individuals must ask for the right information and healthcare providers must provide such information in an understandable way.

We are trying our best to add to the health literacy of our nation through this newsletter. We hope that it is serving its purpose. We urge all the healthcare providers to take a proactive part in this endeavour and we urge our government to start a national action plan to improve health literacy by involving professionals from different fields to develop comprehensive materials for the public. ♦

“ If it looks good,
And it tastes good,
And it feels good,
Then sound medical advice says that
It's not good for you.
So avoid it at all cost.”

Send all correspondence and feedback to

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Editor's Note

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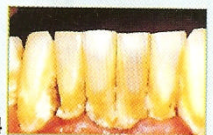
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what's
new at
Diagnofirm

Diagnofirm to introduce the ALCAT Test soon



Diagnofirm Medical Laboratories will be introducing the ALCAT Test, a test used for food intolerance. This will be another first for both Diagnofirm and Botswana. A tremendous amount of health problems have been linked to food intolerance and chronic inflammation (common everyday problems like migraines, aching joints, fatigue, gastrointestinal disorders, eczema, hyperactivity/ADD, asthma and even obesity). Food intolerances or food sensitivities are different from food allergies in that food allergies usually start showing within a short time, while the food intolerances are usually delayed.

The Cell Science Systems Corp. developed a reliable test for food intolerance, the ALCAT test using the ROBOCat II instrument. The machine utilizes electronic methods of cell measurement and computer analysis of the results following an ex vivo challenge of whole blood with food antigens and other substances suspected of association with non-IgE mediated food sensitivities. The focus of this machine is on changes in white blood cell morphology when challenged with a food antigen. These white blood cells changes induced by the interaction of the food antigens is a direct correlation with the release of chemical mediators from these cells (i.e. inflammation markers) that induced these chronic conditions. The machine is CE Marked for the EU, is TUV certified and is manufactured by an FDA registered medical device company which is also ISO 13485 certified.

These food sensitivities, also termed delayed adverse reactions to foods, additives and other

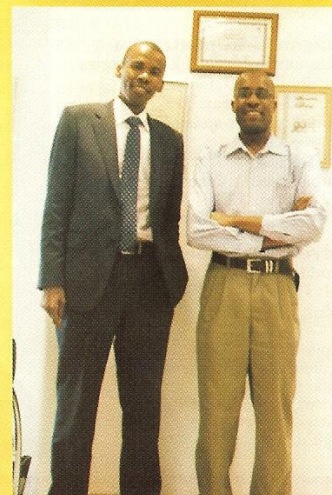
chemicals are not really classical allergies and the delay of symptom onset and the multitude of possible pathogenic mechanisms involved render the identification of the offending food(s) or substance(s) to be much more complicated. Approximately only 2-5% of the US population has a classical allergy to a food. It's also estimated that as many as 80-90% of the population has some form of adverse reaction to one or more foods or additives, manifesting in a broad range of disorders such as; migraine headaches, weight gain, fatigue, hyperactivity/ADD, arthritis, respiratory and skin disorders, recurring ear infections in children, depression and various others (Whereas there are no available statistics for Botswana, it is suspected that the same percentages apply in Botswana).

Standard allergy tests, such as skin testing, are not accurate for these types of reactions as they measure only a single mechanism (such as mast cell release of histamine or the presence in the blood of the IgE molecules associated with such release). Only the ALCAT Test® has been proven to be accurate in identifying the relevant foods and substances associated with the many types of chronic inflammatory and metabolic disorders described above. In addition, the ALCAT Test® is convenient (one blood sample can be used to assay well over 200 foods and substances). Several clinical studies have been done on the ALCAT Test and the ROBOCat II instrument and they have shown the tremendous value of the ALCAT test. ♦

Diagnofirm helped Lemo Kwape who was studying with the University of Aberdeen with his research and in recognition of DML's contribution to Lemo's work, the University of Aberdeen presented DML with a Certificate of Appreciation. The certificate was handed over to DML by Lemo Kwape as depicted in the pictures:



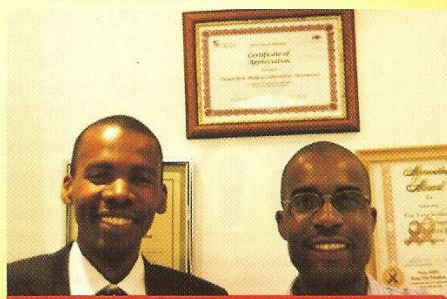
Lemo Kwape with DML's Kefentse



Lemo Kwape with DML's Xavier Mugari and the certificate in the background



Lemo Kwape with DML's Mr Bozo (DML Lab Manager), Mary, Imon and maMdenda at the handover ceremony



Lemo Kwape with DML's Xavier Mugari and the certificate of Appreciation form University of Aberdeen in the background



News & Updates

First Man Cured of HIV



There is a new kind of excitement in the HIV/AIDS research community. A man referred to as the “Berlin patient” has become the first man in the history of this disease to be cured of it. Timothy Ray Brown, who lived in Berlin, Germany, was HIV positive and had leukemia as well, was given a bone marrow stem cell transplant in 2007. The donor of this bone marrow

was one of those Europeans whose genetic composition makes them immune to the HIV virus. After observing Brown for many years, and after testing him repeatedly for the presence of HIV virus, doctors have finally proclaimed him to be completely free of the virus. The bone marrow transplant has given him a new immune system, matching that of the donor, and the virus was no longer able to replicate and exists in his body. His progress is being monitored by the doctors at San Francisco General Hospital and at the University of California at San Francisco medical centre. One of the doctors involved is Dr. Jay Levy of UCSF

who co-discovered the HIV virus about 30 years ago. He has finally uttered the words that scientists have been afraid to use up to now. He says that we now have a “functional cure” which opens the door for “cure research” in this field. Doctors also caution those who may look for hope in Brown's story, by stating that even though this has worked in Brown's case, this kind of bone marrow transplant is very difficult due to the fact that a proper donor may not be found for most people and that the transplant itself is dangerous and chances of death due to the transplant are very high. At least, though, there is one case study which shows light at the end of this dark tunnel. This immunity that the donor has exhibited was covered in one of our earlier issues, and it is found in about one percent of the descendants of Northern Europeans and Central Asian ancestors. There is a genetic mutation, probably the result of some earlier deadly disease, if inherited from both parents, which prevents their immune cells from developing a “receptor” that lets the AIDS virus enter the cell. If the genetic mutation is inherited from only one parent, then it gives the person a strong resistance to the virus, even though immunity is not achieved. ♦

[Yahoo!News, CBS San Francisco, Wired]



Findings from four-day Conference in Rome

Scientists recently held a four-day forum on HIV/AIDS and the following findings were the highlight of this conference:

Treatment As Prevention:

Studies presented show that antiretroviral drugs not only increase a patient's lifespan tremendously, but also make the person a much smaller risk of spreading the HIV virus. In a trial of 1,763 couples, where one partner was HIV positive and the other negative, starting the infected partner on ARV's early slashed the risk of infecting the other partner by 96%.

Pre-Exposure Prophylaxis:

Opposite to the above findings, giving ARV's to the HIV negative partner, instead of the infected partner, reduced the transmission rate by 73%. However, this study will remain only a study as there are issues regarding giving the drugs to people who do not have the infection while

millions of infected people do not have access to the drugs.

Circumcision:

Previous studies on the risk reduction of HIV infections showed that circumcision reduce the risk by 60% in men. Three additional studies from a South Africa show that new cases of HIV infection in men who were circumcised plunged by 76%. If there was no circumcision, the infection rate would have be 58% higher.

Cure:

Scientists used to only think in terms of suppression of HIV with the use of drugs because HIV virus retreated to a “reservoir” after the administration of these drugs and once drugs were stopped, it came back with a vengeance. The idea is now developing to attack these reservoirs to get to a “functional cure” by identifying these lairs and by flushing out the virus. ♦

[Yahoo!Health]



3-D Mammography

Experts recommend that women between the ages of 40 and 60 should get a mammogram every year, as part of screening to find breast changes that cannot be felt. Women who have dense breast tissue and women who have a personal history of breast cancer are advised to screen even at an earlier age. To help make the screening more thorough, there is now a 3-D imaging technology, better known as tomosynthesis, that make it possible to have more precise readings and reduce the need for follow-up appointments by up to 40%.

This procedure uses three-dimensional digital imaging to create a complete reconstruction of the breast, thus enabling radiologist to identify abnormalities that are otherwise difficult with traditional 2-D screening. This technology also uses a cushion, named MammoPad, to provide for a softer and warmer mammography to reduce patient discomfort by up to 50%. ♦

[Medical News Today]

Cause of Male Infertility Found

There may be a new method to treat infertile couples in the near future. A study published in the journal Science Traditional Medicine talks about the discovery of a common gene mutation that leads loss of protective protein coat on the sperm, which then falls prey to the female immune system on its way to the egg.

Researchers at University of California, Davis, discovered a protein, named "glycosylated polypeptide", which is coded by the gene known as DEFB126, which allows the sperm to swim through the mucus in a female's reproductive tract and reach the egg without being detected by her immune system. A gene mutation prevents the male from making this protein which leaves the sperm

vulnerable to destruction and thus leading to male infertility.

In 70 percent of the men, the sperm count is normal and sperm quality is good. That makes their fertility assessment to be okay. Yet, this mutation renders them infertile, and their sperm shows 84% reduction in fertilizing the egg. When a normal beta-defensi 126 protein was added to the defective sperm, it recovered its normal abilities.

Researchers hope that their discovery leads to the development of tests where such infertility can be identified easily and the couple can use the "intracytoplasmic sperm injection" procedure, where the egg is removed from the female, injected with the sperm outside of her body, and implanted back in her for the foetus to grow naturally. ♦

[Medical News Today]

A Potent Antioxidant

Scientists in Spain have discovered a potent natural antioxidant in tomato plants which has 14 times higher antioxidant powers than resveratrol, a known antioxidant that can delay cellular aging, known so far. It is also 4.5 times more potent than vitamin E and 10 time more potent than vitamin C.

This substance is synthesised by the tomato plant when it is subjected to biotic stress. Since it is more potent than previously discovered antioxidants, it can have better uses in multiple industries. It can be used as a preservative in food or even gasoline. It can be used to keep fats and oils from becoming rancid. It has a wide range of applications in pharmaceutical industry and it can even be used in the manufacture of fibres, rubber products, and geotextiles. Most significantly, it can be used in products for skin care, given its possible properties for the prevention of aging. ♦

[Medical News Today]



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According to a report published by the World Health Organization, sixty percent of all deaths are caused mostly by unhealthy diets and physical inactivity. It is important then to eat properly and to participate in some physical activity or sport to stay healthy. A workout in the gym or time spent on treadmill or spinning can be very beneficial, but it becomes monotonous due to repetitive nature of the activities. Sports and play, on the other hand, are more fun and at times may not even seem like a physical activity.

Playing sports has tremendous benefits for the young and adults alike. There is no age limit when you can start and the benefits are guaranteed. Studies show that playing sports reduces the risk of chronic diseases, increases one's longevity, and broadens one's social network. Sports get you moving and get your heart pumping, which helps build muscles and helps improve one's self-image and self-confidence.

According to one article on Importance of Sports to Health, "Playing sports is a potent medicine that doesn't require a prescription." Sports and physical activity are not only important for physical health, but for sound mental health as well. Physical activity reduces anxiety and depression by relieving mental stress. Many benefits of this medicine are listed below.

According to American Heart Association guidelines for a healthy heart, adults must get at least 30 minutes of physical activity five days a week. Playing sports is the most fun way to get that and reduce all of the heart related problems.

Reaction time and coordination are important through every activity in a person's life. Sports like baseball, football, tennis, etc., provide coordination and reaction exercises, thus fine tuning a person's reflexes.

Physical activity makes for a healthier lifestyle and reduces the chances of serious illness, such as type 2 diabetes, by half, thus increasing one's life expectancy. Sports like squash build bone density,

thus having strong benefits for postmenopausal women and help fight osteoporosis. Stressing bones through exercise and sports encourages it to increase its calcium content, which makes it grow stronger and denser. A lifestyle with non-existent physical activity causes the bones to lose calcium and get weaker.

Most of all, sports help build stamina, burn calories, and trim unnecessary fat. The ability to sustain prolonged physical or mental efforts is essential for success in every endeavour. As people age, they lose this ability and thus get off the tracks in what would collectively be called a good life, both personally and professionally. Lack of stamina, in a nutshell, takes the joy out of life. By implication then, sports can give this joy a boost.

Children, who participate in sports and play, tend to stay physically active as adults. Parents should make sure that their kids take active part in playing all kinds of sports, to not only find a way of self-expression but to also build valuable social contacts, which are of great importance throughout their lives. Some even go on to become professional athletes or play a role in professional sports as a way to achieve bigger and better things. Others use their favourite sport as a hobby to augment the fun part of their lives.

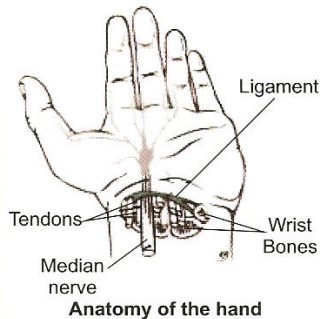
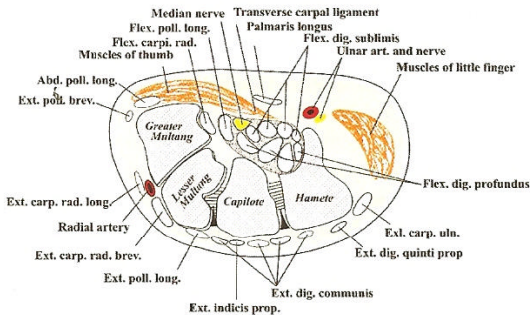
This last aspect is highlighted by our very own Mohammed Chand, whose passion for bicycle riding has taken him to compete in Pick N Pay Cape Argus Cycle Tour a couple of times. This event is geared to make memories. Pride in the parents' eyes, excitement on the young Chand's face, and the crowd, 40,000 strong adrenalin rush, this is what sports can give.

According to experts, top three healthiest sports to play are Squash/Racquetball, Cycling, and Rowing. Our youngster has made a good choice for his passion and we hope that our readers can find his example a good inspiration towards developing interests that can bear equal fruits for them. ♦

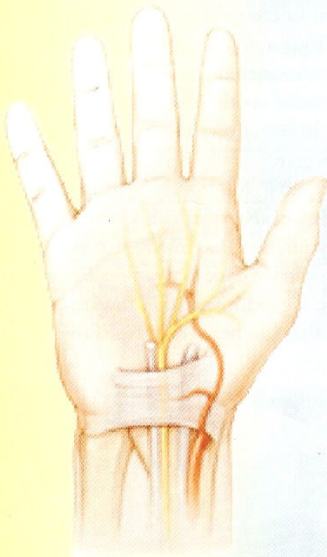




Carpal Tunnel Syndrome



Anatomy of the hand



People who spend a lot of time working with computers tend to develop feelings of numbness in their hands, with episodes of pain shooting through their forearms. This is mainly due to “cumulative trauma from repetitive motion” as they hold their hands in a fixed, unnatural pose for extended periods of time. This painful condition is progressive enough to reach a point where it becomes difficult to grip objects, or even shake hands properly.

Even though this condition became widely known with the use of computers, it is, however, most common in all workplaces where pinching or gripping is

required. People who hold their wrists bent, or who hold their hands with thumb and little finger together, thus causing the back of their palms to squeeze inward, are at risk. These include carpenters, musicians, mechanics, assembly-line workers, even meat packers, and so on. Activities such as gardening, needlework, even golfing and canoeing can bring on the symptoms. In short, almost everyone is susceptible, as we end up working with small tools, resulting in fine hand movements on a daily basis. Even holding a paper in your hand to read can cause your wrist and hand to bend abnormally.

Ironically, the one thing that puts humans above all other creatures, the opposable thumb, is the main cause of this syndrome, generally known as the Carpal Tunnel Syndrome.

Definition of Carpal Tunnel Syndrome:

Carpel Tunnel is a narrow tunnel formed by the bones and ligament at the base of our hands. Through this tunnel run the nine tendons that bend our fingers, the veins and arteries that transport blood to and from the hand, and a main nerve, known as the median nerve, which provides the dual role of being a sensory nerve and a motor nerve. It provides sensations to our thumb, index

finger, middle finger, and the middle-finger side of the ring finger. It also provides nerve signals to move our muscles that control the motor functions of these fingers.

As a result of repetitive motion, our tendons or other tissues in the Carpel Tunnel become swollen and reduce the space available to the median nerve, thus putting added pressure on the nerve. If this pressure persists for a long period of time, the proper functioning of this nerve is diminished, thus leading to numbness, tingling, pain, weakness, and even muscle damage. This condition is known as the Carpal Tunnel Syndrome.

Symptoms of Carpal Tunnel Syndrome:

Symptoms usually start gradually with numbness or tingling in our hand or fingers, especially the thumb, the index finger, and the middle finger. It develops into gradual pain in our wrist, palm, or forearm. Pain is usually more pronounced at night than during the daytime, most likely because we sleep with our wrists flexed. Eventually, there is a great weakness in gripping objects, and may even lead to loss of muscle tissue around the base of our thumb. This problem may be in one or both hands.

Causes of Carpal Tunnel Syndrome:

As mentioned above, this syndrome is often the result of factors that increase pressure on the median nerve. The problem is not the nerve itself, but its reduced ability to function properly. Some people are predisposed due to the smaller size of Carpal Tunnel, especially women, whose wrist size is smaller than men. Trauma to the wrist and the Tunnel itself and many diseases such as arthritis, hypothyroidism, diabetes, etc. can cause this syndrome as well. In some cases, aberrant anatomy, obesity, menopause, pregnancy, or premenstrual syndrome can lead to this syndrome.

Tests and Diagnostics:

In addition to finding numbness, tingling, and pain in the wrist and hand, and finding general weakness in one's hand grip, some of the methods used to diagnose this syndrome include:

Tinel's Sign: Tapping over the median nerve causes either pain or tingling sensation to shoot from the wrist to the involved fingers.

This article was compiled using the following sources: health.yahoo.net, mayoclinic.com, familydoctor.org, clevelandclinic.org, ninds.nih.gov, and wikipedia.org.

Phalen Test: Also known as the wrist flexion test. Patient rests his or her elbow on the table and lets the wrist fall freely. Numbness and tingling develop in less than a minute. In one variation, even bending the wrist forward for 60 seconds will cause numbness, tingling, or weakness.

Wrist X-Rays: This is used to rule out the possibility of arthritis.

Electrical Studies: Electromyography and nerve conduction velocity are used to quantify median nerve conduction and severity of Carpal Tunnel Syndrome.

Prevention of Carpal Tunnel Syndrome:

First step towards prevention is to modify work conditions so that the underlying cause is minimized and the pressure on the median nerve is reduced. This requires proper seating, proper placement of hands and arms, and even altering the repetitive activities around to allow resting of specific body parts while using others. If this is not possible, then workers should take frequent rest breaks, perform conditioning and stretching exercises, even wear a splint to keep wrists straight. Other underlying causes, such as diabetes, should be treated properly. One should try to sleep with wrists straight, maybe with the help of a splint, and find other ways to reduce the stress. Hot and cold compresses may also help.

Treatment of Carpal Tunnel Syndrome:

Drugs that ease the pain and swelling associated with Carpal Tunnel Syndrome can be of help for short term. These include nonsteroidal anti-inflammatory drugs, such as, aspirin, ibuprofen, and other pain relievers. Diuretics, or water pills, can decrease swelling.

Corticosteroids can be injected directly into the wrist to relieve pressure on the median nerve. In all cases, no medication should be taken without the advice of a doctor. Some studies show that vitamin B6 supplements may ease the symptoms.

Stretching and strengthening exercises can be helpful once the symptoms have subsided. Such exercises must be recommended by either a physiotherapist or an occupational therapist to achieve optimal results.

Alternative therapies, such as acupuncture, chiropractic, and even yoga may help reduce pain and improve grip strength.

Surgery is recommended if the symptoms last more than six months. Surgery involves cutting of the band of tissue around the wrist to reduce pressure on the median nerve. In open release surgery, the carpal ligament is cut up to 2 inches (2.54 cm) to enlarge the Carpal Tunnel. Endoscopic surgery involves two incisions in the wrist and palm, to cut the carpal ligament that holds joints together. This form reduces the level of scarring.



Carpal Tunnel Surgery Scars

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The School's Karate team entertaining everyone



DML staff, Mr Mosome, handing over some blankets, looking on is Mr Chand and the MC for the day Mr Molosiwa



DML staff, Ms Sankutha, handing over some blankets



Mr and Mrs Chand with some of the blanket recipients



DML staff, Mr Didi, handing over some blankets



Mr Chand with some of the blanket recipients



DML staff, Mr Mabula handing over some blankets



DML staff, Mr Gapa, handing over some blankets



Mrs Chand handing over some blankets



DML staff, Mr Mupunga, handing over some blankets



DML staff, Mr Mupunga, handing over some blankets



Mr and Mrs Chand



Some of the blankets that were given away

As part of its corporate social responsibility DML donated blankets to some of the students at Segoditshane Primary School. This was a small gesture by the company to help orphans and the needy at the school. The Director of DML, Mr Chand emphasized that "DML as a company cannot forget the community that it comes from, we do this regularly and it is part of our social responsibility"

This gesture is also in line with Vision 2016 goals of a Just and Compassionate Nation and also President Ian Khama's two D's of Dignity and Development. DML hopes to see the lives of the underprivileged improved through development and also to see them living dignified lives.

This year alone DML has given out over 2000 blankets and over 600 food hampers to the underprivileged in our country.



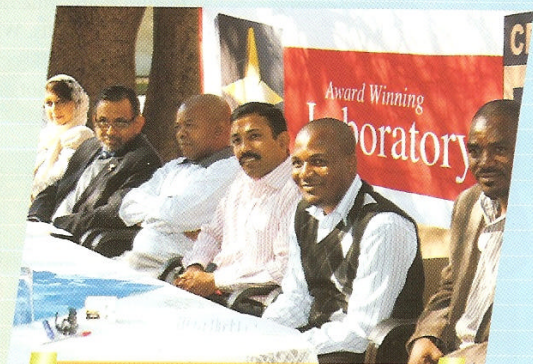
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DML Lab Manager Mr Bozo handing over some blankets



Diagnofirm team, closely following the proceedings



anding



DML Director, Mr Chand giving his address

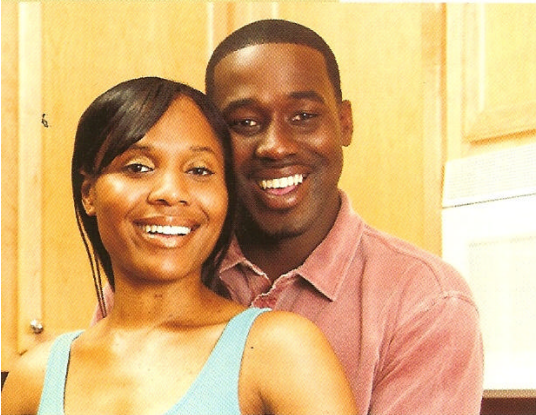


School children following the proceedings



Diabetes

Prof. Kiran Bbagat



Digestion

Your body breaks down the food you eat into simple sugars called glucose. Glucose is your body's main source of energy. Your liver may also make glucose. When you have not eaten, blood glucose levels begin to drop. In response, your liver releases glucose into the bloodstream.

The pancreas

After you eat, glucose enters your blood stream. In response, beta cells in the pancreas make insulin. Insulin is a hormone that helps the body to use glucose for energy. Alpha cells in the pancreas help control how much glucose the liver makes.

How glucose and insulin work together

Insulin helps glucose move from the blood into your body's cells. When insulin attaches to a cell, glucose enters the cell and can be used for energy. Glucose that is not used right away is stored in the cell for later use.

When you have not eaten: Beta cells and alpha cells work together to keep blood glucose in balance. They can sense when glucose levels are high (when you have eaten). They can also sense when the glucose levels are low (when you have not eaten).

When you have eaten: When you eat, the amount of glucose in your blood rises. In response, beta cells make more insulin, and alpha cells stop telling the liver to make glucose.

Are you at risk of type 2 diabetes?

Diabetes is a condition in which your body cannot make enough insulin to turn food into energy. In pre-diabetes, the person's blood glucose is higher than normal but not high enough to be called diabetes. It has been shown that with proper treatment, people with pre-diabetes may be able to prevent or delay diabetes.

Risk factors for pre-diabetes and diabetes

- Overweight (especially excess fat around your waist).

- Family history of diabetes.
- High blood pressure.
- Low HDL (good cholesterol).
- History of pregnancy related diabetes.
- High risk ethnic groups (Asians, blacks and Latinos).

Type 2 diabetes

When you have diabetes, your blood glucose is out of balance. Type 2 diabetes may result from one or more problems.

In type 2 diabetes the pancreas may not make enough insulin. The insulin that the body makes may not work as well as it should (insulin resistance). The liver may make more glucose than the body needs.

Beta cells and alpha cells in type 2 diabetes

In people with type 2 diabetes, beta cells may die off or stop working over time. Alpha cells may not sense how much glucose is in the body.

Diabetes and heart disease

High blood glucose may damage your blood vessels and raise your blood pressure. Too much fat and cholesterol in the blood vessels can reduce or block blood flow to the heart. This may lead to a heart attack.

Diabetes and nerve disease

High blood glucose may lead to nerve damage (neuropathy). As a result you may not be able to feel a blister or callus on your foot. Poor blood flow may cause the blister to become infected. An infection may lead to an ulcer and the need for foot or leg amputation. However, most amputations can be prevented by regular checkups.

Diabetes and kidney disease

Your kidneys clean waste from the blood. Over time, high blood glucose may damage the kidneys. As a result, waste products build up in the body and helpful substances like proteins leak out. This is known as kidney disease. Over many years, diabetes may lead to kidney disease which may lead to kidney failure. This condition requires dialysis (having your blood filtered by a machine).

Diabetes and eye disease

High blood glucose may damage the tiny blood vessels in the retina (in the back of the eye). If some of these blood vessels become blocked, they

continued on page 12





A Very Important Article

Adrenergic manifestations:

- Shakiness, anxiety, nervousness
- Palpitations, tachycardia
- Sweating, feeling of warmth
- Pallor, coldness, clamminess
- Dilated pupils
- Feeling of numbness, "pins and needles"

Glucagon manifestations:

- Hunger, borborygmus
- Nausea, vomiting, abdominal discomfort
- Headache

Neuroglycopenic manifestations:

- Abnormal mentation, impaired judgement
- Nonspecific dysphoria, moodiness, depression, crying, exaggerated concerns
- Negativism, irritability, belligerence, combativeness, rage
- Personality change, emotional lability
- Fatigue, weakness, apathy, lethargy, daydreaming, sleep
- Confusion, amnesia, dizziness, delirium
- Staring, "glassy" look, blurred vision, double vision
- Flashes of light in the field of vision
- Automatic behaviour, also known as automatism
- Difficulty speaking, slurred speech
- Ataxia, incoordination, sometimes mistaken for "drunkenness"
- Focal or general motor deficit, paralysis, hemiparesis
- Paresthesia, headache
- Stupor, coma, abnormal breathing
- Generalized or focal seizures
- "Brief or mild hypoglycaemia produces no lasting effect on the brain, but prolonged and severe hypoglycaemia can cause damage of a wide range."

Wikipedia

This article is a must read for everyone. It will solve many of the problems that we face in our daily lives and if you follow the advice given in it, it may even change your life for the better. I guarantee it!

Many of us go through the day feeling tired, irritable, lethargic, nervous, and anxious. We feel moody, depressed, sleepy, and angry. At night we find ourselves scared, have nightmares, find our clothes damp with perspiration for no reason, wake up screaming, feel like something is wrong in our life without any proof of such, and have headaches that are inexplicable. We may even feel nausea without having eaten anything to cause it.

There may be legitimate reasons for all of these symptoms and you must consult a doctor to rule out any serious problems. But, as I found out for myself and I found this problem with almost all of my friends and co-workers, the reason for many of these problems may be much simpler than you would think otherwise.

Most of these problems may be caused by low levels of blood sugar. Yes, you heard me right.

You don't have to be diabetic or hypoglycaemic to have high or low blood sugar. It may even be caused by not eating properly, not eating at the right time, or not eating the right foods. Today's lifestyles make it very difficult to eat the right foods or to eat at proper intervals. We are very busy, stuck in traffic, had things to do, and were forced to skip lunch or dinner or even breakfast. We eat a candy bar, a slice of toast, or grab something on the run, without realizing that our body needs so much sugar to keep us going and keep us fit, physically and mentally. By sugar, I don't mean sugary treats, but foods that are broken down to glucose by our body for energy.

Our body needs a constant supply of glucose to keep functioning. That means the level of glucose in our blood supply must stay within a certain range. If it falls below that range, we will start losing energy. Our brain depends on a constant supply of glucose for fuel, especially for people who spend their time studying, reading, thinking, and doing brain-centric activities. Only practical way for brain to get continual supply of glucose is from the blood. When blood glucose supply is low, the brain is the first organ that is affected. There are a number of nervous, hormonal, and metabolic responses that result from falling levels of glucose, all with side-effects of the kind mentioned at the beginning of this article.

We can make sure that the level of available glucose is always normal if we know how to adjust our routines to provide proper food, at proper intervals, so that there is always a constant supply

of available sugar in our systems. This is something that I learnt when I was researching my article about hypoglycaemia. I wish I had learnt these things when I was much younger so I didn't suffer from this condition or let it progress to such an advanced stage that it can become life-threatening, but I hope that at least you can see for yourself the wisdom of knowing how to control your blood sugar. All it takes is proper eating habits. Work and other stuff, all be damned! One must think of one's health before any assignments, any deadlines, or any appointments.

I suffer from hypoglycaemia, but I have friends and colleagues who have same symptoms as I do because of their eating habits. I know I am beating this issue to death, but so many problems can be avoided if we JUST EAT RIGHT! I'll discuss hypoglycaemia in the following paragraphs, but you'll see what I mean about other factors that normal people may also face, that are similar to hypoglycaemia.

Hypoglycaemia is basically low blood sugar, as the term literally means "under-sweet blood". Most healthy individuals maintain blood plasma glucose levels between 4-8 mmol/L (72-144 mg/dL). If blood glucose level goes below this, then it is considered low. Our bodies have a tolerance of 3.3 to 3.9 mmol/L before the effects of low blood sugar become noticeable. Symptoms of hypoglycaemia start when the blood sugar level falls below 3.0 mmol/L (54 mg/dL). At this stage, hormonal defence mechanisms kick in (adrenaline and glucagone), which produce typical hypoglycaemic symptoms of shakiness and dysphoria (depression in layman's terms, which makes one feel hopeless and unhappy.) If we don't do anything even at this stage to correct our glucose level—these mechanisms only work for a short time—and let our glucose level to fall to 2.2 mmol/L (40 mg/dL) or below, obvious brain impairment will be the result. If blood glucose levels fall below 0.5 mmol/L (10 mg/dL), "most neurons become electrically silent and non-functional, resulting in coma." A few deaths have been reported due to severe hypoglycaemia.

The list on the side is taken from Wikipedia and it shows the effects of low blood sugar on us very thoroughly. As I've said before, this applies to all situations that cause our blood sugar levels to drop. According to the authors, "Hypoglycaemic symptoms and manifestations can be divided into those produced by the counter-regulatory hormones triggered by the falling glucose, and the neuroglycopenic effects produced by the reduced brain sugar."



There are three main reasons for lowering of blood sugar. One, diabetic people may suffer from what is known as insulin shock, where the amount of insulin used is more than needed, and since it can't be "turned off", it results in lowering of the blood sugar. Two, hypoglycaemic people, whose body produces more than required amount of insulin, or other reasons that lead to drop in blood sugar. And three, people who don't eat when they should.

I have felt my brain literally go empty when my blood sugar drops drastically. Usually, it takes about four hours after my meals for hypoglycaemia to set in. If I eat a good meal, this time can be longer, because the food takes longer to digest, but if I eat a donut, or other sweet pastry, I feel the effects even in two hours. Why do you think the experts call breakfast the most important meal of the day? Because, we sleep for close to eight hours every night and when we wake up, our blood sugar levels are critically low anyways. If we make it worse by not eating any breakfast, or by not eating proper breakfast, then imagine how much worse the effects can be. When we put in long hours without taking a break, or skip meals so we can finish our project, we think that we are being very productive, but

the end result is actually the opposite. Not only we lose our productivity because our brain suffers from lack of energy, but we have to spend time recovering from the negative effects. This, mixed with not getting enough sleep, is a sure-fire recipe for disaster.

It is very easy to maintain a healthy level of sugar in our blood. This applies to diabetic, hypoglycaemic, and otherwise healthy individuals. Eat on time and eat foods that are recommended as best choice on the table found below. Select slow-digesting foods over processed, fast-dissolving foods to maintain a steady supply of sugar throughout the period between meals. Eat often enough throughout the day and the night to keep enough supply of sugar available for the body and the mind. Use hard candy, nuts, fruits, or vegetables as a quick-fix when levels are about to drop. Keep yourself fuelled at all times. Don't let the needle go towards empty. Always keep enough reserve to keep you going.

Remember, the secret to everlasting happiness is, very simply, normal levels of blood glucose. If you can maintain that, you'll always be happy, healthy, and free of one thousand and one ailments. You can quote me on that. 💡

Best and Worst Foods for Diabetes and Hypoglycaemia

It is very important for people suffering from diabetes and hypoglycaemia to control their blood sugar levels and to keep them as close to normal as possible. One of the best ways to do this is to select foods that are good for maintaining a relatively normal level and to avoid those that cause blood sugar levels to spike uncontrollably. The diabetes food pyramid divides all foods into six groups and we present below the best and worst food choices from each group as published on the WebMD website. Groups are listed from the bottom of the pyramid to the top.

Breads, grains, and other starches: This group contains mostly complex carbohydrates. Their absorption is slower than the simple carbohydrates, and even though they cause the sugar level to increase, they do so slowly and steadily, thus keeping the sugar levels within the normal range and keeping your energy levels high for an extended period of time. Best choices are foods containing whole grains, flour made from whole grains, breads and other items made from such flour, and baked potatoes. Worst choices are foods containing processed grains, bleached flour, breads and other items made from white flour, and fried potatoes.

Vegetables: Vegetables are a good source of carbohydrates, vitamins, and minerals. Some are even a good source of fibre. Best choices are fresh vegetables, either eaten raw or steamed, roasted, or grilled. Worst choices are vegetables cooked with lots of fat or canned with a lot of sodium and other chemicals.

Fruits: Fruits also contain carbohydrates, vitamins, minerals, and fibre. Best choices are fresh fruits, fruit canned in fruit juices, and pure fruit juice. Worst choices are fruits canned with syrup, fruit variations with added sugar, and fruit drinks with

added sugar and chemicals.

Meat and Other Proteins: This group consists of all kinds of meat and beans, cheese, eggs, nuts, and tofu. Best choices are baked, broiled, grilled, or stewed meats; white meat over red meat; and skinless and cuts with lower fat over the one with skin and fat. Worst choices are fried meats, high fat cuts, poultry with skin, fried fish, and beans and other non-meat proteins containing large amounts of fat in their preparation.

Dairy: This group includes milk and milk products. It contains protein and minerals, especially calcium. Best choices are milk and milk products with lower fat content. Worst choices are whole milk and milk products with high fat content.

Fats, Oils, and Sweets: This group provides a lot of calories but is low on nutrition. This whole group will constitute as a worst choice because it leads to weight gain, thus making it difficult to keep sugar levels under control. Best choices are vegetable based fats. Worst choices are animal based fats. 💡

Diabetes *continued from page 10*

cannot nourish the retina. The damage to the retina leads to the growth of new vessels. Some of these new vessels may be weak. Weak vessels may leak blood, leading to blurred vision and possibly blindness.

Treating type 2 diabetes

Some people with type 2 diabetes can control blood glucose with exercise and diet alone. Keeping your blood glucose in balance may help prevent to delay problems caused by diabetes.

Meal plan

A healthy meal plan can help you.

- It may help you by reaching and maintaining a healthy body weight.
- It can help you by keeping your blood glucose levels in a healthy range.
- It can help you by lowering your blood fat levels (for example cholesterol).

Exercise plan

Regular exercise (30mins, five times a week) can help you.

- It can help you maintain muscle tone and physical fitness.
- It can help to improve how insulin works to lower blood glucose in your body.
- It can help lower blood fat levels (for example cholesterol).

Oral medication

Your doctor may also prescribe oral medicines. There are many types of oral diabetic medication and your doctor may prescribe more than one type. Make sure you understand what medicines you are taking and follow your doctor's instructions consistently.

Blood glucose monitoring may help

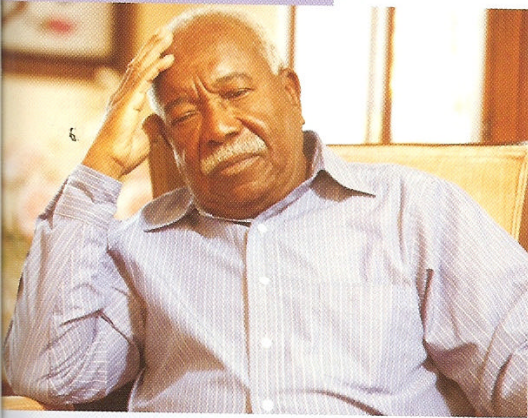
Checking your blood glucose levels can help you.

- See how well your treatment is working.
- Detect high and lower levels of sugar and so that you can take proper action.
- Know your blood glucose levels. 💡



High Blood Pressure

Prof. Kiran Bhat



High blood pressure, also known as hypertension, is a major risk factor for heart disease, as well as, kidney disease and congestive heart failure. High blood pressure is also the most important risk for stroke. Even a slightly higher blood pressure level increases your risk for these conditions.

Major contributors to high blood pressure are family history of the disease, overweight and dietary salt. Older individuals are at higher risk than younger people. Among older individuals, women are more likely than men to develop high blood pressure. The black population is more likely to develop high blood pressure at any age than whites. Nearly all of us are at risk as we grow older.

High blood pressure is often called the “silent killer” because it usually does not cause any symptoms. As a result many people pay little attention to their blood pressure until they become seriously ill. According to an American national survey, 2/3 of people with high blood pressure do not have it under control. The good news is that you can take action to control or prevent high blood pressure and thereby avoid many life threatening diseases.



What is blood pressure?

Blood pressure is the amount of force exerted by blood against the walls of the arteries. Everyone has to have some blood pressure so that blood can circulate in the body. Usually blood pressure is expressed as two numbers, such as, 120/80, and is measured in millimetres of mercury (mmHg). The top number is systolic blood pressure, the amount of force used when the heart beats. The bottom number or diastolic pressure is the pressure that exists in the arteries between heart beats.

Because blood pressure changes often, we need to keep checking it. Blood pressure is considered high when it stays above 140/90 mmHg.

Understanding risks:

It is important to understand what each of these categories mean. High blood pressure increases heart disease more than any other category. Be aware that high systolic blood pressure levels (the

top number) is dangerous. If your systolic blood pressure is 140 or higher, you are more likely to develop heart disease and kidney disease even if your diastolic pressure (the bottom number) is in the normal range. After age 50, people are more likely to develop high systolic blood pressure. High systolic blood pressure is high blood pressure. If you have this condition, you will need to take steps to control it.

High blood pressure can be controlled in two ways: by changing your lifestyle and by taking medication.

Changing your lifestyle:

If your blood pressure is not too high, you may need to control it entirely by losing weight if you are overweight, getting regular physical activity, cutting down alcohol and changing your eating habits. A special eating plan called the “Dietary Approach to Stopping Hypertension” (DASH diet) emphasizes fruits, vegetables, wholegrain foods and low fat or fat free milk products. It is rich in magnesium, potassium and calcium, as well as, protein and fibre. It is low in saturated and total fat and cholesterol and limits the amounts of red meat, sweet products and sugary drinks.

If you follow this form of diet and consume less sodium in your life, this should reduce your blood pressure even more. Sodium is a substance that affects blood pressure. There are many ingredients that contain salt and it is found in many processed foods, such as, soups, fast food takeaways, breads, cereals and salty snacks.

Taking blood pressure medication:

If your blood pressure remains high even after you make lifestyle changes, then you will likely be prescribed medicine. Lifestyle changes will help the medicine work more effectively. In fact, if you are successful with the changes you make in your daily habits, you may be able to gradually reduce how much medication you take.

Taking medicine to lower blood pressure can reduce your risk of stroke, heart attack, heart failure and kidney disease. If you take a drug and notice any side effects then ask your doctor to change the dosage or to prescribe another type of anti-hypertensive medication.

It is important to take your medication exactly as your doctor prescribed it. Before you leave your doctor's office, make sure you understand the amount of medication you are taking and how often, and indeed what times of the day, you should take it. 🍎

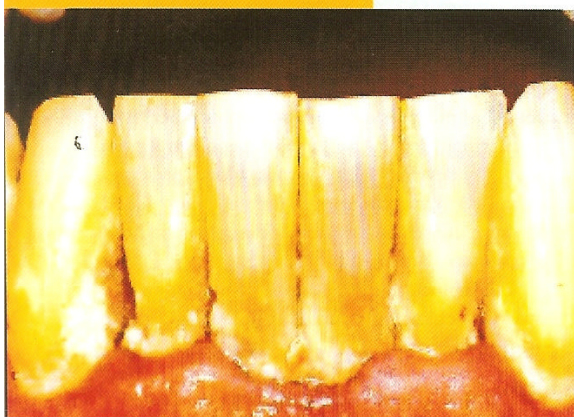




tooth
ache

Dental Caries (Tooth Decay)

Dr. Vipul Bhatia
Dental Surgeon



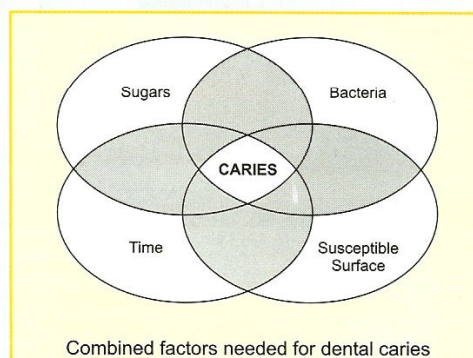
Dental Plaque

Dental Caries, also known as tooth decay, is a bacterial disease of the calcified tissues of teeth characterised by the demineralisation of the inorganic and destruction of the organic structure of the tooth.

It is the second most common disease after the common cold and is a major cause of tooth loss. It affects people of all ages but is more predominant in children and young adults.

Time

- Caries needs time to develop and progress. The rate of progression varies between individuals as there are many modifying factors. Caris progresses slower through the enamel than the dentine due to its greater strength.



Process

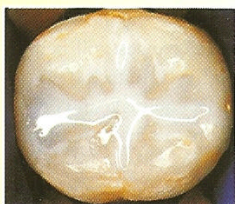
The mouth contains many different types of bacteria and some of these bacteria metabolise certain dietary carbohydrates into acid as a by-product. This acid demineralises minerals in the surface of the tooth (enamel) and destroys the underlying dentine, commonly resulting in cavities (holes in the tooth).



Caries clearly visible in the fissures of this molar



Caries clearly visible in the fissures of this molar



Tooth with fissure sealant in place



X-ray showing a defective restoration (filling) with an overhang creating a plaque stagnation

Four factors are needed to produce caries:

Cariogenic Bacteria (Dental Plaque)

- Most bacteria in the mouth are found in dental plaque. This is a soft, sticky, yellow-white substance comprised of saliva, food debris, acid and bacteria that adheres to surfaces of teeth and other oral structures (such as dentures) if there is ineffective cleaning. The most common organisms responsible for caries are specific strains of *Streptococcus mutans*.

Fermentable Carbohydrates (Sugars)

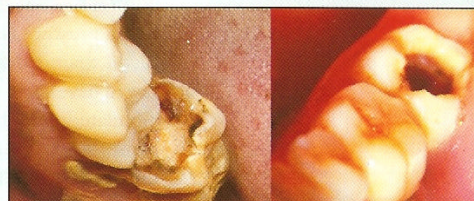
- These come from our diet and there are various types of sugars that have cariogenic potential. Sucrose (cane sugar), glucose, fructose and maltose pose the biggest risk.

Susceptible Tooth Surface

- Certain areas of the teeth are more susceptible to plaque accumulation and are common sites for caries. These include the pits and fissures of the molar/premolar teeth; interproximally (in-between teeth); near the gum line; around faulty dental fillings, faulty crowns and bridges; in-between braces; around dentures.

Signs and Symptoms

- In the initial stages there may be no symptoms.
- Some people may be able to notice white or brown spots and dark pits on tooth surfaces.
- They may develop sensitivity when having cold/hot/sweet foods and beverages.
- If cavities are present, there is likely to be food packing with subsequent pain on biting.
- Ultimately, if left untreated, a path to the pulp is created through the broken down enamel and dentine. This leads to inflammation of the pulp and, later, the surrounding periodontium causing severe toothache with possible swelling.



Cavitated teeth due to caries: both have a poor prognosis

Diagnosis

Caries is diagnosed by your dentist after a thorough history and clinical examination. Several methods may be used to aid this:

- Direct vision/eyesight
- Probing with a dental instrument
- Radiographs (x-rays)
- Trans-illumination (special light)
- Special dyes
- Electronic caries detectors

Prevention

Prevention requires a multifactorial approach with the aim of reducing/eliminating the aetiological factors.

Oral Hygiene

The aim is to reduce plaque and calculus deposits which contain cariogenic bacteria.

- Brush twice daily with a fluoride containing toothpaste.
- Clean in-between teeth daily with dental floss/tape or interdental brushes to remove food debris.
- Use fluoride containing mouthwash to rinse after meals.
- If you wear dentures, clean them daily and leave them out of your mouth in the night.
- Visit your dentist regularly for scaling (cleaning).

Dietary Control

- Poor diet is probably the main causative agent of caries, with sugar being the biggest offender.
- Reduce intake of sugar and sugar containing products (such as confectionary, soft drinks, sweets etc).
- Have a well balanced diet (3 meals a day) and avoid snacking on sugary foods.
- Avoid sticky foods such as toffee and dried fruit.
- Avoid medication that contains sugar (such as in some infant syrups).
- Chew sugar free chewing gum as this stimulates saliva production which has a natural cleansing action on teeth.
- Prolonged breast feeding should be avoided as milk contains a natural sugar.
- Infants should not be left to sleep with a bottle containing sugary liquids in their mouth as this leads to nursing caries (bottle caries).

Regular Dental Visits

This enables your teeth to be monitored and any caries to be diagnosed early on by your dentist, increasing the possibility of arresting or reversing the caries (if only confined to the enamel).

- Fissure Sealants may be placed on the occlusal (chewing) surfaces of molars by your dentist. These are thin plastic-like coatings that prevent the accumulation of plaque in the fissures of teeth.
- Fluoride is known to strengthen teeth and reduce caries. Your dentist may apply topical fluoride to teeth or give supplemental fluoride to prevent and/or reverse existing caries.
- Any plaque stagnation areas, such as defective fillings, can be treated.
- Based on your individual caries risk, your dentist will advise you on how often you should come for routine dental visits.

Treatment

Caries risk and activity evaluation is established by assessing the entire oral environment and not only the tooth in question. The dentist may:

Provide no treatment

For example in a deciduous (baby) tooth that is about to fall out and has no symptoms.

Reduce Risk Factors

For example correct defective fillings, apply fissure sealants, give

you a dietary sheet to complete and give advice on eating habits.

Promote Remineralisation

This is done by topical application of concentrated fluoride usually in the form of a gel or paste.

Place Restorations

The tooth is cleaned up by removing the decayed part of the structure and a filling is placed in the space created. There are various types of filling materials and your dentist will select the most suitable one for the particular scenario. Sometimes if the filling is very large, the tooth is weakened, and so a crown (cap) may be placed on top of the tooth to provide strength.

Provide Root Canal Treatment (RCT)

If caries has spread to the pulp, then it is most likely that the nerve supply to the tooth has been damaged (irreversible pulpitis) and is a source of infection. The nerve supply and the infected tooth tissue in the canals are then removed, cleaned and a special root filling placed in the canals. A restoration (as above) is then placed. ♦

Extract the tooth

Depending on the circumstances, the tooth may ultimately be removed.

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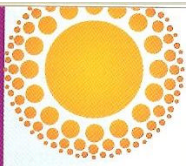
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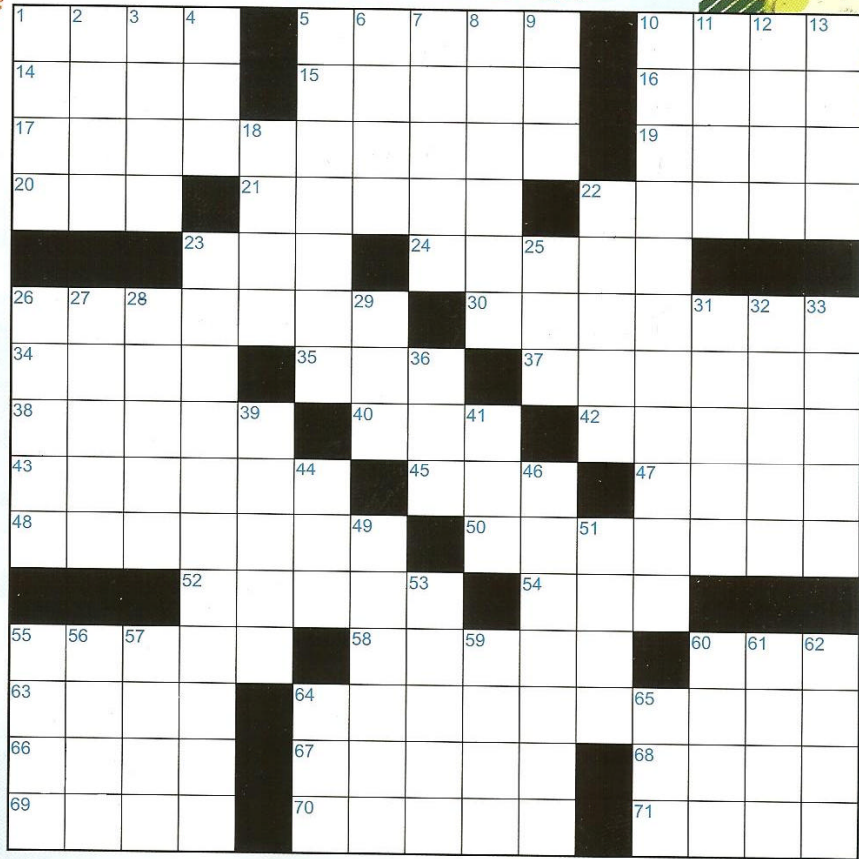
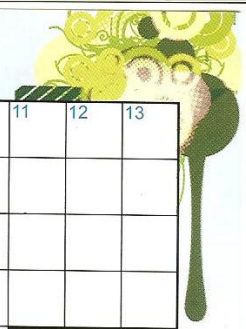
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fun &
games



CROSSWORD



Scramblers

Unscramble each of the clue words then copy and unscramble the circled letters to form mystery words

Theme: BASIC EMOTIONS

VOLE

LOVE

YJO

JOY

RUSRIESP

SPRISER

NARGE

GRANGE

SAENSDS

SENSAS

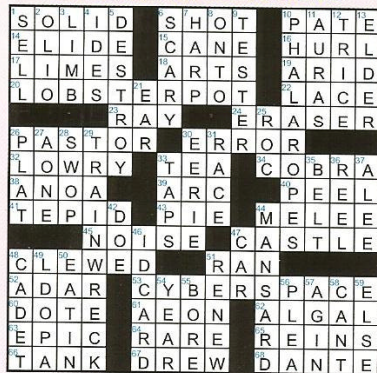
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Last Issue solutions

CROSSWORD



Scramblers

Theme: Physics

TGLIH = LIGHT
RITYVAG = GRAVITY
LERCITPA = PARTICLE
HMNAICECS = MECHANICS
SAINEMTMG = MAGNETISM
TETELICRYC = ELECTRICITY

Mystery Word:

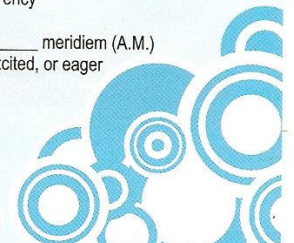
ERMYNATHMICSOD = THERMODYNAMICS

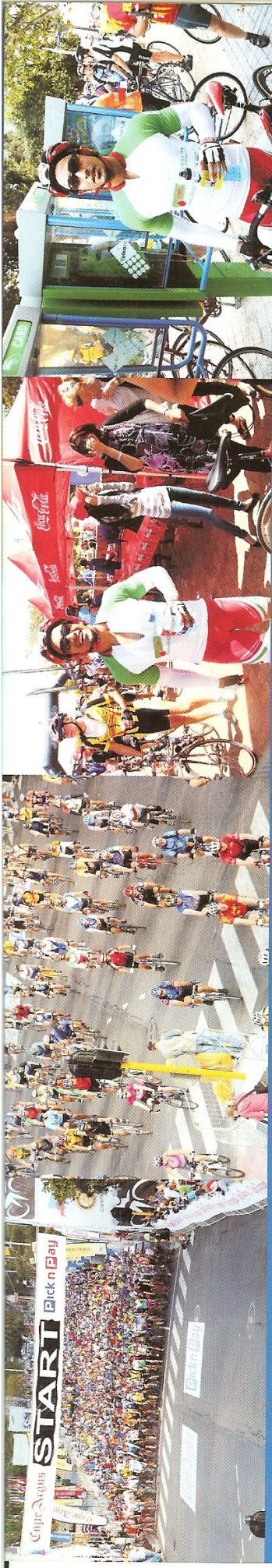
ACROSS

- recedes from shore
- son of Abraham and Sarah
- the parliament of modern Russian
- cut and gather crop
- actress Blair of "Cruel Intentions" fame
- President of Pakistan
- medical facility for long term illness
- small island
- pull sharply
- thou shalt not _____
- Cupid's "weapon"
- member of Laotian people
- dirty-looking, often disreputable
- a section or passage taken from a longer work
- ball-shaped candy with a centre of soft chocolate
- Hawaiian garlands of flowers (plural)
- organ of hearing
- old-fashioned warning (archaic)
- what makes Hulk turn green?
- random access memory of a computer
- consisting of three parts
- a woman gets married _____
- chatter annoyingly
- magician or magus (archaic)
- furiously angry
- supplies food for a function
- diamond or sapphire
- sticky tree growth
- dissolute and licentious men (French) (plural)
- cut something up
- cry of sheep
- makes mistake
- bring something into focus
- direction in which sun rises
- bid farewell in French
- instrument between soprano and tenor
- strip off the skin or outer covering
- royal domain
- large horsefly that sucks animal blood

DOWN

- in the past, or long time ago (archaic)
- a boyfriend or male admirer
- Big _____ Theory
- whirlpool bath
- form of an element with extra neutrons
- successive changes in flora and fauna
- an assumed name
- charm to protect against bad luck
- machine part that transfers motion
- a farmer that specializes in milk production
- Union of Soviet Socialist Republics
- early-growing sorghum in the USA
- _____ Good Men movie
- Russian emperor
- fully developed and mature
- act of treason (French)
- distinctive period of history
- make somebody very happy and excited
- noble gas used in arc lamps
- close but no _____
- tobacco smoke residue
- _____ Tuck, companion of Robin Hood
- quick thrust in fencing
- Islamic ruler with two e's
- beam of light
- plural of extreme anger
- Big _____
- "What's _____?"
- unsatisfying intellectual material
- decipher
- Amazon valley native
- Saint _____, a Caribbean country
- a ridge of coral or rock in a body of water
- test requiring spoken answers
- _____ Major, or _____ Minor, constellations
- old unit of Chinese currency
- invoice
- prefix for before, i.e. _____ meridiem (A.M.)
- intensely interested, excited, or eager
- not near
- a small bag or pouch





“The Cape Argus Cycle Tour is probably one of the most beautiful cycle races in the world as it hugs the coast line along False Bay and then along the coast line on the Atlantic Sea Board. It also is claimed to be the largest individually times cycle race and is currently the only event outside Europe to be part of the international cycling union's golden bike series. There are roughly 40,000 cyclists who take to the roads to tackle the 109 Km route around Cape Town.”

Write-up: capetownactivities.co.uk,

Photo: cycletour.co.za

We are proud to say that our very own Mohammed Chand is one of the cyclists who has completed this tour twice so far.

Next CYCLE TOUR 2012: Entries open on 1 September 2011!

RACE DAY 2012: 11 March 2012

