

DIAGNOSTICS

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From My Keyboard



We have just finished the first quarter of the year and most of us are taking stock of our projected achievement versus our real achievements. It is my sincere hope that not many of us have missed our targets and if we have, we are still at least on course to achieving most of them in the not too distant future. For me

the 1st quarter of the year gives an indication of what the whole year has in store for me and judging from what has happened so far, I am in for a hectic year.

Just the other day I popped into the movie house to watch 'The Pursuit Happyness' and it got me thinking, 'what truly makes one happy?', is it lots of money? A good car? A beautiful house? Or perhaps to be in good health?' As for me, J. Kenfield Morley summed it up very well when he said; 'I believe the recipe for happiness to be just enough money to pay the monthly bills you acquire, a little surplus to give you confidence, a little too much work each day, enthusiasm for your work, a substantial share of good health, a couple of real friends and a wife/husband and children to share life's beauty with.' Whatever happens from now on, I hope at the end of the year we shall all look back and consider 2007 a year that was filled with happiness.

Stay informed !!!

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Inside this Issue

Recent Events @ DML	1
Diagnofirm introduces new TB Diagnostic Test	2-3
Diabetic Related Hypertension	4
TB in Diabetic Patients	5
Childhood Obesity	6-7
Diagnofirm in Pictures	8-9
Dietary Supplements	10
Measuring Natriuretic Peptide for Risk Stratification of Critically ill Patients	11
Wellness	12
Hypertension - Generally Speaking	13
Urinary Tract Infections	15
Diagnofirm Medical Laboratories now SANAS Accredited	16
Jokes Corner	16

Tiger Design and Graphics



Mr. and Mrs Chand receiving the Century International Quality ERA Award from BID CEO Jose E. Prieto in Geneva, Switzerland, April 2007



DIAGNOFIRM MEDICAL LABORATORIES

by: Silas Nunu

Recent And Upcoming Events @ Diagnofirm

Its now official, after a successful assessment Diagnofirm Medical Laboratories is now accredited to SANAS. Like the saying goes, 'if you want to stay ahead of the pack, run faster', we hope to keep running faster and not lose the momentum.

Recently Diagnofirm was also awarded the Business Initiative Direction's Century International Quality ERA Award in recognition of the good work we are doing. With achievements like these and recognitions from all over, we must be doing something right and we thank all our clients for lighting the fire under us and keeping us on our toes and ensure that we deliver nothing but the best service.

World Health Awareness Days

The month of May sees us commemorating world hypertension day which Diagnofirm Laboratory will observe together with other stakeholders in health such as the Cardiac clinic. This encouraged me to scour through the literature to find some other days in the health calendar that have recently passed or will be upon us in the near future that we may not necessarily commemorate. You will be surprised at the many internationally observed days that I came across such as stress awareness day and sexual health day. The themes for these days that I can think of are endless! To the

Continued on Page 3

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DIAGNOFIRM INTRODUCES A NEW TB DIAGNOSTIC TEST

THE Quanti - FERON - TB® Gold

Tuberculosis (TB) infection is a major cause of morbidity and mortality all over the world and it is estimated that one third of the world population is infected with mycobacterium tuberculosis. Although 95% of the cases and 97% of all deaths occur in high endemic countries the disease continues to be a problem in developed countries as well. The most powerful tools in any anti-TB control program are on time diagnosis and successful treatment of patients with active disease.

At present, diagnosis is based on clinical suspicion and appropriate response to anti-TB therapy. Detection of acid fast bacilli or granulomatous lesions is not an optimal means of diagnosing TB but is strongly indicative of an infection. The diagnosis of patients with microscopy and culture negative extra pulmonary TB is complicated and is often delayed due to the need for invasive diagnostic procedures and no definitive diagnostic test can exclude infection with Mycobacterium tuberculosis.

The tuberculin skin test (TST) has been used for almost a century to support the diagnosis of active and latent TB infection and has practically remained unchanged for over 60 years. Targeted screening and chemotherapy to prevent latent TB infection from progressing to overt disease are important for tuberculosis abolition strategies and the TST has been the traditional test of choice in discovering the infection.

The TST has many restrictions and a test to replace it has been sought for years. The main downside of the TST is the lack of specificity due to the cross reactivity with the proteins present in other mycobacteria, such as Mycobacteria bovis bacillus, Bacille Calmette Guerin (BCG) vaccine strain, and Mycobacterium avium. The test requires 2 patient visits to obtain a reading, a requirement that takes substantial resources for the patient and providers and results in many unread TSTs. There is also great inconsistency in measuring the size of the skin test even by well skilled staff. Patient factors such as BCG vaccination, immunosuppression and infection with non-

TB mycobacterium affects the TST and can result in false negative and false positive readings.

The TST can boost past sensitization to mycobacteria antigens leading to complex serial testing recommendations. The TST does not help to predict which 5%-15% of patients with latent tuberculosis infection will go on to develop active disease. Doctors now have available a TB detection assay that is accurately able to overcome the issues of BCG vaccination and Non-Tuberculosis Mycobacterial (NTM) infection. This allows therapy to be initiated with the assurance that most causes of false positive results have been eliminated. The test eliminates the subjectivity in placing and reading as well as the 2nd visit hassle and cost associated with the TST also called the Mantoux test.

The Quanti-FERON TB Gold test (QFT) is an in vitro diagnostic test that addresses many of the limitation of the TST. It is an in vitro diagnostic test that requires only one visit to draw blood and provides objective results. It tests multiple antigens at the same time and does not boost anamnestic immune response.

TB specific antigens ESAT-6, CFP-10 and TB 7.7 are only present in mycobacteria tuberculosis and are absent from all strains of the BCG vaccine and most environmental mycobacteria. QFT uses blood collection tubes coated with combination of these antigens to stimulate T-cells with-in the patient's whole blood. If previously exposed to mycobacteria tuberculosis, T-cells will secrete the cytokine interferon gamma into the plasma which is measured by ELISA. If the patient's response to the TB specific antigens is above the cut-off, then TB infection is indicated.

Because of its high specificity, the same cut-off is used irrespective of whether the person is suspected of active TB infection, making it simple to use in all screening situations. QFT has shown high sensitivity in culture confirmed TB patients exceeding that of the TST (Mantoux.) Specificity is very high (about 98%) even in the BCG vaccinated individuals.

Advantages of QFT over the TST

- Differentiates TB infection from BCG vaccination
- Differentiates TB infection from nearly all NTM
- Only requires a single patient visit
- Suitable for repeat and serial testing, no booster phenomenon
- Simple yes/no answer with universal cut-off for every subject
- Highly reproducible and objective in vitro procedure
- Simple whole blood assay with results available in 24 hours

Studies have shown a high sensitivity and specificity when detecting gamma interferon (INF- γ) responses to these specific antigens in patients with active TB, non-exposed healthy people and recently M. tuberculosis infected health TST converters independently of their BCG vaccination status. A high prevalence of healthy individuals in TB high endemic areas responds to the antigens indicating a high prevalence of latent TB infection.

A study carried out showed a high sensitivity of QFT (85%) compared to microscopy (42%) and culture (59%). 87 % of the patients with negative microscopy and negative culture were positive the QFT and by combining microscopy and culture with QFT the sensitivity increased to 96% meaning that QFT has use in the diagnosis of TB. Diagnosis of extra pulmonary TB and culture negative TB remains a challenge and the QFT has particular advantage here and may significantly improve the diagnosis of extra pulmonary TB and microscopy and culture negative TB. In healthy BCG vaccinated controls without known exposure to M. tuberculosis, an interferon gamma response to the antigens was detected in only 1 out of 39 (3%) indicating a high M. tuberculosis specificity.

The high specificity of the QFT is a consistent finding in populations selected because of a very low risk of exposure to M. tuberculosis. A negative test result for healthy individuals may be useful as a tool to exclude TB infection and a positive result may help in identifying persons who are candidates for preventive

chemotherapy or intensified clinical follow-up. Immunosuppression due to HIV or severe TB is a question of potential concern with the assay based on cellular immune responses. The data from the tests indicate that more advanced disease be associated with weak T-cell responses, which has been suggested in previous studies. Data suggests that the QFT test could be a very useful complementary tool in the diagnosis of active TB especially in patients with microscopy and culture negative extra pulmonary TB. Together with negative microscopy and culture, a negative QFT test may be used to exclude TB in immunocompetent individuals.

The QFT is particularly useful in Botswana where everybody is vaccinated with BCG. The test is intended for use as a diagnostic aid for M. tuberculosis complex infection whether TB disease or latent TB infection and the CDC recommends the use of the QFT in all circumstances where one would normally use a skin test. Limitations of the test are that specimens for testing must be incubated at 37 degrees Celsius within 16 hours of collection. Communication with the laboratory is needed to co-ordinate collection and transportation requirements, if the samples are not collected at the laboratory.

Medical treatment or conditions that impair immune functions can potentially reduce Interferon gamma responses and prevent detection of a specific response to TB antigens. Some specimens may not have sufficient lymphocytes to detect specific interferon gamma responses.

Result Reporting

For any result used in the diagnosis or exclusion of TB disease and assessing the probability of latent TB infection it requires that a combination of epidemiological, historical, medical and diagnostic findings be taken into account when interpreting the result. QFT results are reported as positive, negative or indeterminate.

An indeterminate result indicates that the mycobacteria TB infection status of the individual could not be determined. Such a result can be as a result of impaired immune status and/or incorrect performance of the test and is indicated by a low response to the test mitogen positive control.

Please note that an indeterminate result is meaningful; it does not mean a failed test. Most indeterminate responses occur in people who have reasons for a significantly impaired immune system. In the immunosuppressed, an indeterminate response is appropriate as no test measuring a T-cell based response should be relied upon in such individuals. However most immunosuppressed individuals with TB infection are positive in the QFT not indeterminate. Severe immunosuppressive therapies such as chemotherapy for cancer result in a high rate of indeterminate results as should be expected. Indeterminate results are strongly associated with 0mm TST responses, strongly confirming the fact that the TST does not work well in people with immunosuppression, but unlike the QFT, the TST does not control for immune status.

Although the QFT has excellent sensitivity, a negative result does not preclude the possibility of M. tuberculosis infection. Studies in HIV positive persons have found that QFT performs well even when CD4+ counts are low, with the rate of indeterminate results only increasing when the CD4+ count drops below 100/ul. The indeterminate results are generally associated with severe immunosuppression. QFT performs well in children and with the same sensitivity level at that of the TST and with enhanced specificity.

The introduction of the new test is envisaged to help detect more TB positive patients and reduce the number of false

positives and ultimately help in the fight against Tuberculosis in Botswana. For any further information regarding the new test please contact Diagnofirm Medical Laboratories for assistance. 📞

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Continued from Page 1

Recent Events

more common ones; in March there is the Tuberculosis day, in April World health day and haemophilia day; in May, Heart week, Asthma day, Hypertension day, World Lupus day and World No Tobacco day; in June, International men's health week and World Blood Donor day.

These world health awareness days serve to remind the world of the challenges in health that still affect us and bring these ills to the fore so that we the public are better informed about them and can come together to try and have a better health.

The theme for this year's World Health day best encapsulates the aim of health awareness days: "Invest in health, build a safer future".

In this edition we have included articles on the tuberculosis and hypertension in commemoration of their awareness days. 📞

QFT Result	Report/Interpretation
Positive - ESAT-6, CFP-10 or TB 7.7 responsiveness detected	Mycobacteria tuberculosis infection likely
Negative - TB antigen responses detected	Mycobacteria tuberculosis infection is unlikely but cannot be excluded especially when (1) any illness is consistent with TB disease (2) likelihood of progression to disease (e.g. because of immunosuppression) is increased.
Indeterminate	Test not interpretable. Note possible immunosuppressed implication of low mitogen indeterminate

DIABETIC-RELATED HYPERTENSION

Guidelines on diabetes, pre-diabetes and cardiovascular disease (1) pay special attention to epidemiological and pathophysiological issues related to hypertension in diabetic patients.

They also provide a number of recommendations on the impact of these two diseases on cardiovascular risk as well as on the blood pressure targets of antihypertensive treatment.

In the context of these guidelines on diabetes, pre-diabetes and cardiovascular disease, the clinical impact of the association of diabetes and hypertension as well as its therapeutic implications have been extensively reviewed and critically commented (1).

Hypertension and cardiovascular risk in diabetes

The prevalence of high blood pressure is up to three times greater in diabetic versus in non-diabetic patients, presumably because being overweight; obesity and renal dysfunction (which are of frequent detection in the diabetic patient) favour the development and progression of the hypertensive state.

When diabetes and hypertension coexist, there are exponential detrimental effects on the cardiovascular risk, due to the occurrence of endothelial dysfunction, micro-and macrovascular complications as well as blood pressure elevation.

This triggers the development of left ventricular hypertrophy, myocardial ischaemia and congestive heart failure. The epidemiological "burden" of the above mentioned cardiovascular complications can be quantified as follows. The risk for coronary heart disease increases by 1.7 fold to 1.9 fold in type 1 and type 2 diabetes mellitus patients with high blood pressure as compared to non-diabetic patients (2).

As far as left ventricular dysfunction and heart failure is concerned the estimated risks are even greater (taking into account that in the Framingham study the relative risk for clinical heart failure in diabetics patients increases by 4.0 fold as compared to non-diabetics) (3).

According to the Finnish Prospective Study (4), the stroke risk is increased 3 to 4 fold in hypertensive patients with diabetic disease.

Goals of antihypertensive treatment

In type 1 and type 2 diabetic hypertensive patients, antihypertensive drug treatment should be particularly aggressive and aimed at lowering blood pressure below 130/80 mmHg. This target of treatment is based on the evidence, collected in the United Kingdom Prospective Diabetes Study (UKPDS) and Hypertension Optimal Treatment (HOT) study, that an intensive blood pressure reduction in hypertensive patients is associated with a low rate of cardiovascular events (5,6).

A blood pressure reduction below 130/80 mmHg (ideally less than 120/75 mmHg) should be clinically relevant in diabetic patients with proteinuria, reduced glomerular filtration rate or overt nephropathy.

Unfortunately, in current clinical practice many patients with diabetes and hypertension, despite treatment, fail to achieve the above mentioned recommended targets (7).

Therapeutic approach

In diabetic hypertensive patients, the antihypertensive therapeutic approach should be aimed at:

- Reducing elevated blood pressure values.
- Improving renal and cardiovascular protection.
- Lowering elevated cardiovascular risk profiles.

The large number of clinical trials performed so far in diabetic hypertensive patients have shown that the benefits related to antihypertensive treatment mainly depend on the blood pressure control "per se".

However, some drugs (particularly those acting on the renin-angiotensin system) may have more favourable effects than others, particularly when renal damage coexists. Greater cardiovascular protection can be obtained by employing combination treatment, with the use of drugs interfering with the renin-angiotensin system, which appears to be actively involved in the development and/or progression of end organ damage.

It should be made clear, however, that except for a few specific indications, any antihypertensive drug or drug combination can be used, unless contraindicated, since achieving blood

pressure goals seem more important than selecting a specific blood pressure lowering compound.

Concomitant drug treatment to reduce cardiovascular risk.

Clinical evidence has shown that in diabetic hypertensives, strict glycaemic control is as important as a tight blood pressure control. This means that metabolic intervention should be aimed at lowering fasting glucose levels below 7mM and glycated haemoglobin to 6.5 % or below. Given the high risk profile of the patients combining diabetes and hypertension, the total cholesterol and HDL cholesterol targets should be <5.2mM and > 1.5mM, respectively. A further therapeutic intervention aimed at preventing coronary and cerebrovascular events should be represented by antiplatelet drugs (aspirin).

Combined clinical conditions: metabolic syndrome and atrial fibrillation

The clustering of risk factors represented by hypertension, hyperglycaemia (ranging from impaired fasting glucose to overt diabetes), dyslipidaemia and visceral obesity termed metabolic syndrome is of frequent detection in current clinical practice and represents a high risk condition for cardiovascular complications.

The key message is that this condition requires early diagnosis and an aggressive treatment (1). The target blood pressure values are those previously mentioned for the hypertensive diabetic patients with signs of renal damage. Finally, what the guidelines emphasise is the not infrequent association of hypertension (particularly when complicated by diabetes) and atrial fibrillation (1). They also underline the adverse clinical impact of this association, given that the evidence that atrial fibrillation represents one of the most important risk factors for stroke (8). Also in the case of this comorbidity, the guidelines provide recommendations based on early diagnosis and rigorous therapeutic approach based on antithrombotic and anticoagulant therapy.

TUBERCULOSIS (TB) IN DIABETIC PATIENTS

It has been estimated that the prevalence of diabetes mellitus among adults will more than double from 171 million to 366 million by 2025 and the greater part of the cases will occur in the developing countries.

TB has already been declared a 'global emergency' by the WHO in 1992 and with an estimated one third of the world's population infected; TB is now acknowledged as the single biggest killer disease in the world. Now with diabetes assuming epidemic proportions it has become very important to take measures for the prevention and control of this deadly pair. TB was the chief cause of death in diabetic patients in the pre-antibiotic era and more than 50% of diabetics are documented to have had pulmonary TB during post mortem examination in that era and it is still one of the major killers in diabetic patients in the developing countries. It was also noted that progress of TB in diabetes occurred 10 times more frequently among non-diabetics and that development of TB followed the onset of diabetes in 85% of cases. The frequency of pulmonary TB also increased with the duration of the diabetes mellitus in an individual. These statistics still reflect a lot of what is happening in the developing countries.

FACTORS RESPONSIBLE FOR PATHOGENESIS OF TB IN DM

A variety of theories have been put forward to try and explain the increase in incidence and the pathogenesis of TB in diabetes and these mainly relate to:

- hyperglycaemia
- acidosis
- low opsonic index
- decreased bactericidal activity
- hypovitaminosis
- increased availability of glycerol

All these are conditions encountered in diabetes.

The three most important aspects in the pathogenesis of tuberculosis are:

- virulence of the organism i.e. presence and multiplication
- hypersensitivity versus immunity against infection
- Tissue destruction and caseous necrosis.

The tubercle bacilli have no known exotoxins, endotoxins or histolytic enzymes. Their pathogenicity is due to their ability to escape killing by macrophages and to induce delayed type of hyper sensitivity. Secondary TB is caused by the reactivation the disease which occurs when the host resistance is impaired, which may be due to immunosuppression from any cause including malnutrition, alcoholism, malignant disease, silicosis, AIDS or diabetes mellitus

The lowering of the natural resistance is an important factor for the increased incidence of TB in diabetes. Alterations in the biochemical conditions in blood and tissues and decreased antibody formation results in lowered resistance. Malnutrition plays a role in the lowering of metabolic activity of macrophages and interleukin-1 production thereby leading to the progress of TB. In addition hepatic dysfunction with demonstrable depletion of glycogen and consequent hypovitaminosis may play a major role in causing TB in diabetics. Pituitary dysfunction increases the vulnerability to tuberculosis as a result of the overproduction of adreno-corticotrophic hormone (ACTH) and subsequent rise in corticosteroids which may enhance the exudative inflammatory response but retards the granulation tissue formation. Cytokine production in diabetes is significantly impaired thus lowering the immunity to TB. A possible cause of the increase in TB incidence of pulmonary TB in diabetics could be defects in host defenses and immune cell factors.

Table 1 below lists the defects in diabetics' immunologic make-up and physiologic pulmonary functions.

Immunologic Abnormalities	Pulmonary physiologic dysfunction in diabetes
abnormal chemotaxis, adherence, phagocytosis and microbicidal functions of poly morphonucleocytes	diminished bronchial reactivity
decreased peripheral monocytes with impaired phagocytosis	Reduced elastic recoil and lung volume
poor blast transformation of lymphocytes	Reduced diffusion capacity
defective C3 opsonic function	Occult mucus plugging of the airways
	Reduced ventilatory response to hypoxaemia

Continued on Page 14

CHILDHOOD OBESITY

Obesity is defined as the extreme buildup of fat and when in relation to total body weight the fat will be accounting for greater than 25% of body weight in boys and 32% in girls. Generally in these cases, weight gain will have got to the point that it poses a serious threat to health.

Globally, childhood obesity is now attaining epidemic levels with 5-25% of all the children and teenagers being obese and this varies with the ethnic group. Sadly obesity is on the increase and will have a considerable impact on longevity and we are in danger of raising a generation of people who have a shorter life expectancy than their parents.

The increase in childhood obesity is reflected in the wider tendency among the adult population with more and more adults being obese and showing conditions such as colon cancer, osteoporosis and chronic back pain.

Along with the rise in childhood obesity, there has been an increase in the prevalence and occurrence of medical conditions in children and adolescents that had been rare in the past.

Paediatricians and childhood obesity researchers are reporting more frequent cases of obesity related disease such as type 2 diabetes, asthma and hypertension that were considered adult conditions.

Not all obese infants become obese children and not all obese children will become obese adults.

However the prevalence of obesity increases with age among both males and females and there is a great possibility that obesity beginning even in early childhood will persevere through the life span.

The problem of children being obese is a serious one in that it can have lasting effects on one's emotional and physical health. Children who are obese are at a risk of contracting severe chronic diseases such as diabetes, colon cancer, cardiovascular diseases, osteoporosis and hypertension.

Children afflicted with severe weight problems can contract gall bladder disease, liver disease, and sleep apnea and may run the risk of high cholesterol.

Overweight boys tend to be at a higher risk of asthma.

Table 1 lists some of the problems that may arise as a result of childhood obesity:

Table 1 : Problems That May Arise As A Result of Childhood Obesity

1.	increased risk of adult obesity
2.	increased paediatric hypertension
3.	increased risk of type 2 diabetes mellitus
4.	increased risk of coronary heart disease
5.	increased stress on the weight bearing joints
6.	lowered self esteem
7.	strained relationships with peers
8.	very significant social and psychological problems

Causes

Many of the causes of childhood obesity centre on the disparity between energy intake and use. Obesity results from the interaction of nutritional, psychological, familial and physiological factors.

- **The Family** - There are increased risks in children with 2 obese parents. Parenteral modeling of both eating and exercise behaviour indirectly affect the child's energy balance. Parents are the most important role models for their children
- **Low energy expenditure little or no physical activity**, - inactive behaviour like watching TV and too much computer games with the concurrent consumption of high calorie snacks can result in obesity. Children are no longer exposed to energy spending games.
- **Heredity (genetics)**- This influences fatness, regional fat distribution and response to overfeeding. Infants born to overweight mothers have been found to be less active and to gain more weight by age three than those born to normal weight mothers.
- **Socioeconomic status** - children from poor background have been shown to be more obese than their counterparts from richer families.
- **Environment** - over exposure to advertising that promotes high calorie foods and lack recreational facilities.

- **Illness** - condition like hypothyroidism, Cushing's syndrome can cause a child to be obese
- **Drugs** - a child who is on steroid or anti-depressant treatment can also gain a lot of weight.

Diagnosis

Factors to look at when trying to diagnose childhood obesity include:

- Family history of obesity
- Family history of obesity related risks such as early cardiovascular disease, high cholesterol, high blood pressure levels and type 2 diabetes
- Family history of cigarette smoking and sedentary behaviours
- Signs of child obesity related health risks from a paediatrician's evaluation e.g. cardiac risk, type 2 diabetes risk factors- glucose intolerance, and insulin levels that are higher than average, orthopaedic problems including weight stress in the joints in the lower limbs, skin disorders, psychological and psychiatric disorders such as low self esteem and negative self image, depression and withdrawal from peers.
- Patterns of sedentary behaviour
- Taller height children with obesity are often above the 50th percentile in height.
- Smoking initiation youngsters use smoking as a method of weight control.

Treatment

Obesity is easier to prevent than to treat. Prevention focuses in great measure on parent education. In infancy parent education centres on promotion of breast feeding and recognition of satiety. In early childhood education should be on proper nutrition, selection of low fat snacks, good exercise activity habits and monitoring TV watching. In cases where preventive measures cannot totally overcome the influence of genetic factors, parent education should focus on building self-esteem and address psychological issues.

Treatment of obesity in children should not have weight loss as a goal. The aim is to slow down or halt weight gain so that the child will grow into his or her body weight over a period of months or years. Early and appropriate intervention is

particularly valuable. Childhood eating and exercise habits are more easily modified than adult habits. Teaching healthy behaviours at a young age is important since change becomes more difficult with age.

Behaviours involving physical activity and nutrition are the basis of preventing obesity. Families and schools are the most critical links in providing the foundation of those behaviours. Outside of the home, children and adolescents spend the bulk of their time in school and therefore schools should provide an environment that promotes healthy nutrition and physical activity habits. It is crucial to create an active environment and a healthy eating environment.

Small and achievable weight loss goals should be set to avoid discouragement and allow for the normal growth process. Participation of the entire family should be encouraged. Weight control programs that involve parents tend to show more progress in the long term compared to directing the program only to the child. Preventing and treating childhood obesity requires the entire family.

Some of the changes that may be initiated are as follows:

Family Behaviour

Encourage small progressive steps.

- **It's not a race:** the first rule of change is to not make changes too quickly. It takes time and dedication to unlearn unhealthy behaviours and to develop new, healthy ones.
- **Think small:** small gradual changes are easiest to follow and incorporate into your daily lives and small changes can make a big difference over time e.g. switching off the TV during dinner, switching from fizzy drinks to water or milk or taking a walk after dinner once a week. Remove sugar sweetened drinks from home, offer more whole grain meals and snacks, reduce the number of meals eaten out of fast foods and other restaurants, remove TV from children's rooms and include children in active chores such as washing clothes.
- **Set individuals and family goals.** Individual goals can be to eat fruits and vegetables for lunch and family goals can be to have fast foods only once a month. The new

changes might take time getting used to but stick to the plan as best as you can and evaluate your progress. It's better to create a new plan than to stick to one that is not working.

Physical Activity

Children should have a formal exercise program. Have your child participate in daily vigorous physical activity, sufficient to increase his heart rate and make him sweat. He should start with at least 15 minutes daily and increase to at least 30 minutes. He can try fast walking, jogging, and bicycling. Team sports are fun, but not all are vigorous enough to be sufficient alone for weight management.

Diet management

Fasting or extreme caloric restriction is not advisable for children. It is psychologically stressful and affects growth and a child's perception of normal eating. Nutritional education and professional advice need to be followed. Monitor your child's diet by writing down what he eats and drinks. Review this record each day, and find foods that he could eliminate by substituting healthier, lower-fat, lower-calorie choices. Do not rely on "diet foods" alone, but rather switch to leaner cuts of meat, poultry, fish, lower-fat cheeses and nonfat milk. Add more vegetables and fiber to his diet, and use fruits as desserts rather than cake, pie, cookies, pudding and ice cream. Watch the size of each serving, and avoid second helpings

Behavior modification

Children need to be taught good eating behaviours such as slow rate of eating, limiting time and place of eating and giving rewards and incentives for desirable behaviour. Be a positive role model.

From researches conducted all over the world, the increase in child hood obesity seems to have begun in the 1990s and is continuing. This period saw children's environment change in multiple ways which may be contributing to the obesity epidemic. Over the same period, calorie dense convenience foods and soft drinks were both increasingly available to children and increasingly advertised to children. Children consumed more fizzy drinks and more pre-prepared food away from home, as increases in single parent

working families may have driven up demand for convenience. A host of environmental changes also contributed to reducing children's activity levels over the period in questions. In particular, children traveled more in cars and less likely to walk to school. Changes in the parents' work lives also made it difficult for children to engage in safe, unsupervised physical activity. Finally, children spent more time in such sedentary activities as watching TV, playing video games and using computers. Taken together, research on obesity singles out no one critical cause of the increase in obesity, rather many complementary developments seem to have upset the crucial energy balance by simultaneously increasing the children energy intake and decreasing their energy expenditure. The challenge in formulating policies to address children's obesity is not necessarily to determine what changed to create the current epidemic, but rather, what is the most effective way to change children's environment and restore their energy balance going forward. In the words of UK Weight Concern Executive Director Caroline Swain, 'if we are to preserve the health of the next generation, there is a desperate need for detailed research into what is triggering this rising trend in childhood obesity as well as practical action on a national level to encourage families to adopt healthier lifestyles.' 🍌

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Diagnosis

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Mr Jose E. Prieto, presents the Century International Quality ERA Award shown below to Mr. & Mrs Chand



Mr. & Mrs Chand proudly pose with the Century International Quality ERA Award



Class of 2007. Attendees of the 9th Century International Quality ERA Convention, Geneva Switzerland, April 22 - 23 2007



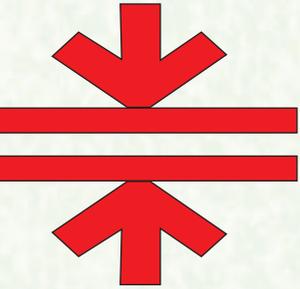
Members of the Botswana Medical Fraternity meeting to discuss the implementation of the Quanti-FERON TB Gold Diagnostic Test



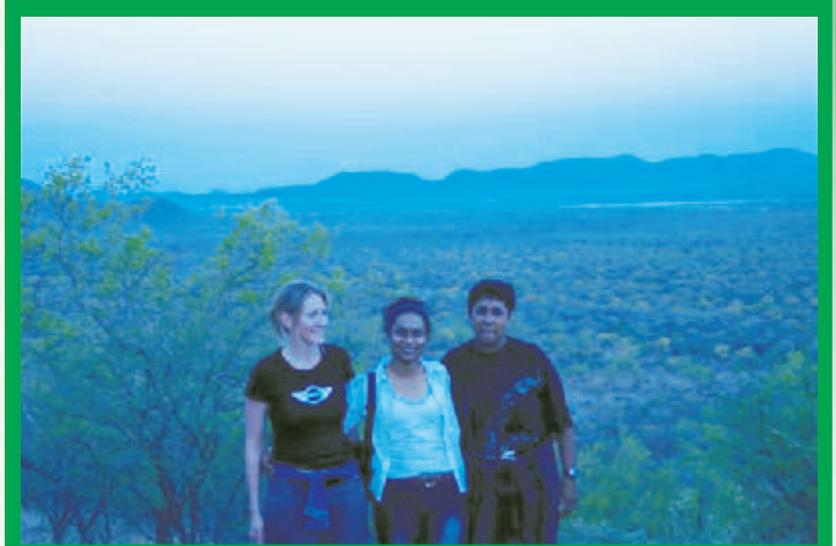
Century International Quality ERA Award

Form In Pictures

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BORATORY



The SANAS Accreditation Assessment Team, from left to right - Yolanda, Vijay and Lorna



Community, attending the launch of the
at Diagnofirm



Cellestis representative explains how the Quanti-FERON TB Gold assay works



ional Quality ERA
ward



DIETARY SUPPLEMENTS

A number of dietary supplements have been postulated to have beneficial effects on cardiovascular disease. These include antioxidant vitamins B, vitamins, omega-3 fatty acids, plant sterols, soluble fiber, soy, nuts, alcohol, and teas.

Omega-3 Fatty Acids:

Omega-3 polyunsaturated fatty acids (FA) can be derived from either plant or marine sources.

The principal plant-based omega-3 FA, alpha-linolenic acid (ALA), is found in soy and its derivative tofu, canola oil, flax seeds, and nuts. Omega-3 FAs derived from marine animals ("fish oil") include docosahexaenoic acid (DHA) and eicosapentenoic acid (EPA).

Typical dietary sources include mackerel, salmon, herring, sardines, anchovies, and albacore tuna. Early suggestions that fish oil might be beneficial came from epidemiologic comparisons of Greenland and Alaskan Inuits with other cohorts.

These Inuits consumed a high-fat diet with a high component of omega-3 FAs from seal and whale meat. Despite their heavy consumption of fat, they had more favorable lipids profiles and lower rates of coronary artery disease (CAD). Three follow-up epidemiologic studies in the 1980s found that persons who ate fish every week had a lower mortality from CAD.

At least 15 prospective cohort studies have now examined the effects of fish consumption on CAD outcomes. Overall, they suggest a protective effect on CHD outcomes, with a stronger effect on death than on nonfatal MI. Additional reports suggest that fish oil ingestion is associated with slowed atherosclerotic progression in native coronary arteries and in vein grafts in men.

Four randomized controlled trials have tested either omega-3 FA capsules or oily fish in CAD patients. The largest of these is the GISSI-Prevenzione study, which randomized 5666 post-MI patients to 1g/day or usual therapy.

The primary analysis showed a 20 percent reduction in all-cause mortality ($p=0.01$) and a 45 percent reduction in sudden death ($p < 0.01$).

A meta-analysis of 11 randomized trials of omega-3 FAs (7951 intervention patients,

7855 control patients) found a 20 percent reduction in non-fatal MI ($p=0.16$), a 30 percent reduction in fatal MI ($p < 0.001$), a 30 percent reduction in sudden death ($p < 0.01$), and a 20 percent reduction in overall mortality ($p < 0.001$). No evidence was seen for a different effect of dietary versus nondietary sources of omega-3 FAs. Several mechanisms of benefit have been proposed for omega-3 FAs.

The reductions in sudden death observed in several studies support a direct anti-arrhythmic effect. High dose omega-3 FAs produce a significant reduction in serum triglycerides concentrations and a small drop in blood pressure.

They also decrease platelet aggregation. Other suggested mechanisms include an anti-inflammatory effect and enhanced nitric oxide production.

Current American Heart Association (AHA) recommendations are to consume two servings of fish (especially fatty fish) per week as part of heart-healthy diet. The use of fish oil supplements as part of a program of secondary prevention is reasonable.

Antioxidants and Antioxidant Vitamins

A large body of epidemiologic evidence supports a favorable association between a diet high in antioxidants and reduced risk of CHD.

Most of these studies examined the consumption of foods and estimated the likely vitamin content, while a few studies have examined the supplemental consumption of vitamins.

There are now five randomized controlled trials using vitamin E for primary (two trials) or secondary (three trials) prevention.

The Cambridge Heart Antioxidant Study (CHAOS) demonstrated that 400 to 800 IU of vitamin E given as secondary prevention reduced the combined endpoint of death or nonfatal MI by 47 percent.

However, the larger Heart Outcomes Prevention Evaluation (HOPE) trial, which tested 400 IU of vitamin E in a high-risk secondary prevention population, found no therapeutic benefit on a variety of outcome measures, including disease progression as assessed by carotid ultrasound.

The GISSI-Prevenzione trial, which tested 300 IU of vitamin E in almost 8000 patients, also failed to detect a benefit. Finally, the Collaborative Group of the Primary Prevention Project (PPP) found no evidence for a therapeutic benefit for 300 IU of vitamin E in 4495 subjects with one or more major cardiovascular risk factors.

At present, therefore, the preponderance of evidence does not support a role for vitamin E supplements in either primary or secondary prevention of CHD.

Vitamin C (ascorbic acid) is a strong water-soluble antioxidant. The epidemiologic evidence for a favorable effect of vitamin C on CHD prevention is much less persuasive than for vitamin E.

B Vitamins

Moderate elevations of plasma homocysteine levels have been associated with an enhanced risk for atherosclerotic disease. Homocysteine levels can be decreased by the administration of supplemental folate with or without vitamins B6 and B12. Epidemiologic studies suggest potential cardiovascular benefit with B-vitamin supplementation, possibly via this mechanism. One trial of patients undergoing percutaneous coronary intervention found that lowering homocysteine with a combination of folic acid and vitamins B6 and B12 reduced the need for target vessel revascularization at 1-year follow-up.

Soluble Fiber

Dietary fiber supplements have been shown to produce desirable changes in LDL-cholesterol and in blood sugar levels. Epidemiologic findings suggest a possible impact on coronary disease and outcome. However, there are no prospective trials of the effect of these supplements on cardiac outcomes.

Soy Protein and Isoflavones

Substitution of soy protein for animal protein can produce significant reductions in LDL cholesterol and triglycerides. Whether this reflects a unique benefit of soy or isoflavones in particular or merely a reduction in dietary animal protein and fat is unclear.

Continued on page 14

MEASURING NATRIURETIC PEPTIDE FOR RISK STRATIFICATION OF CRITICALLY ILL PATIENTS

Natriuretic peptide testing identifies critically ill patients at higher risk of mortality. Brain natriuretic peptide (BNP) and amino-terminal pro-BNP (NT-proBNP) may serve as useful biomarkers to predict survival in intensive care unit patients suffering either from cardiac or septic shock. Moreover, these biomarkers may provide decision support for the application of further invasive methods for hemodynamic monitoring.

Role of natriuretic peptides in the diagnosis of heart failure

B-type natriuretic peptide (BNP) and amino-terminal pro-BNP (NT-proBNP) are promising cardiac biomarkers for evaluating acute heart failure. Elevated serum levels have been described in both left ventricular systolic and diastolic dysfunction as well as in right ventricular pressure overload states, such as pulmonary embolism and pulmonary hypertension. Both biochemical markers appear to be useful in distinguishing between dyspnea due to heart failure or due to other causes, especially of pulmonary origin. For clinicians a rapid measurement of natriuretic peptides in the emergency room makes it easier both to establish or to 'rule out' the initial diagnosis of heart failure. Increased levels of atrial natriuretic peptide (ANP) and BNP have been identified as predictors of cardiac dysfunction and prognosis in congestive heart failure and ischemic heart disease.

Role of natriuretic peptides in critically ill patients

Recently, the role of these biomarkers has been intensively studied in critically ill patients suffering from various forms of shock including cardiac and septic shock. Patients with shock in the intensive care unit (ICU) usually have a high risk of mortality. One method in evaluating shock patients is invasive hemodynamic monitoring with pulmonary artery catheterisation (PAC). However, despite almost 20 years of randomised clinical trials a clear benefit leading to improved survival from the use of PAC has not been proven. Non-invasive methods for estimating hemodynamics and prognosis in intensive care unit patients are urgently needed. Several studies have demonstrated that levels of the "cardiac hormones" BNP and NT proBNP are

increased in patients with cardiac dysfunction arising from sepsis or septic shock. Moreover, it has been shown that septic patients with elevated NT-pro-BNP levels were about four times more likely to die within 28 days than patients with lower values. Therefore, NT-proBNP has been suggested to serve as useful biomarker to predict survival in patients with severe sepsis.

Although elevated levels of NT-proBNP do not necessarily correlate with high filling pressures among patients with ICU shock, a marked elevation in NT-proBNP is strongly associated with ICU death. Low NT-proBNP values in patients with ICU shock identifies those at lower risk of death, and may be useful in excluding the need for pulmonary artery catheter placement in such patients. Levels below 1200pg/ml have an excellent negative predictive value of 92% for cardiogenic shock waiving the need for additional invasive diagnostic procedures.

There has been a broad discussion about the usefulness of PAC in ICU patients. The neutrality of PAC for clinical outcomes of critically ill patients may result from the absence of effective evidence-based treatment regimens according to PAC information across the broad spectrum of critically ill patients. Elevated levels of natriuretic peptides, however, might be easier to interpret and undoubtedly indicate a higher risk of mortality of a given critically ill patient.

Mechanisms contributing to elevated natriuretic peptide levels in ICU-patients

Left ventricular stretch and elevations of end-diastolic pressure and volume regulate the release of natriuretic peptides from the cardiac ventricle in acute heart failure patients. In critically ill patients, especially in those with an infectious origin of their disease, several other mechanisms account for increased natriuretic peptide levels and for the observed lack of association with cardiac filling pressures and hemodynamics: Lipopolysaccharide and proinflammatory cytokines up-regulate the transcription of the gene encoding for BNP in cardiomyocytes. For example, a correlation between the proinflammatory cytokine interleukin-6 (IL-6) and

natriuretic peptides was found.

Thus, plasma levels of natriuretic peptides are not only affected by left ventricular dysfunction, but also by inflammatory cytokines corresponding to the magnitude of infection within ICU patients. However, further studies evaluating the precise mechanisms for enhanced natriuretic peptide secretion in critically ill patients are still needed.

Conclusion

Elevated levels of BNP or NT-proBNP characterise critically ill patients suffering not only from cardiac shock, but also identifies those with reversible left ventricular dysfunction due to severe sepsis and septic shock. The measurement of natriuretic peptides in critically ill patients may help to identify candidates at higher risk of mortality. Moreover, it may provide promising decision support for the application of further treatment regimens and diagnostic procedures including invasive hemodynamic measurements in critically ill patients.

Whether measurement of NT-proBNP or BNP is valuable in the clinical course of sepsis or for guiding therapy afterwards in the private cardiologist's office, has not been examined yet within a clinical trial. As for chronic heart failure, guiding therapy according to BNP-levels may be useful, but further clinical trial data are needed to prove this.

Interlude

THE MAGICAL DANCING DUCK

A circus owner walked into a bar to see everyone crowded about a table watching a little show. On the table was an upside down pot and a duck tap dancing on it. The circus owner was so impressed that he offered to buy the duck from its owner. After some negotiations, they settled on a figure of \$10,000 for the duck and the pot.

Three days later the circus owner runs back to the bar in anger, "Your duck is a rip off! I put him on the pot before a whole audience, and he didn't dance a single step!"

"So?" asked the ducks former owner, "did you remember to light the candle under the pot?"



WELLNESS

Wellness seems to be a buzzword of the twenty first century; maybe due to changes in lifestyle a lot of people are struggling to be well.

Another factor could be as the saying goes "there is a positive that comes out of every negative", with HIV, the positive we can learn out the scourge is that, almost every serious minded person wants not only to remain negative but also to become healthier.

In other words, HIV has demanded from us health consciousness to look at health from holistic perspective, which is what wellness is all about. Wellness therefore, is a lifestyle of self responsibility, personal development and balance in all wellness dimensions. Which means we can not separate our physical, mental, spiritual, emotional, social and occupational state of being if we want to achieve TOTAL WELLNESS.

The key word is finding "balance" looking good on the outside needs to be underpinned by feeling good on the inside. We sometimes think we are well simply because we don't have any diseases. I have not done a study but I think a number of people whose bodies are in a state of disease are in fact less than those with emotional turmoil. The pain we experience in life is not always physical, sometimes is emotional.

We live in times of perpetual stress, heart aches and headaches, life events tend to throw us into a state of imbalance. If we become stuck for too long in this imbalance our emotions may be too toxic which will almost inevitably affect our physical bodies causing illnesses.

Staying healthy or being well is an ongoing process; it involves a lot with being in tune with the laws of nature, meaning there are basic requirements to be satisfied, making a conscious decision to make a NEW START in life before it is too late. New start stands for:

Nutrition

Eating nourishing foods and beverages, this is by no means not a call for exotic foods and contrary to popular belief it a call to is go back to the basics of unprocessed foods - Going back to what nature has provided. We now eat from packets, bottles and tins on a daily basis.

Exercise

does not necessarily mean joining the gym though if you can -excellent. We are always giving excuses why we don't exercise.

I don't have time - who has it? Sleep 30 mins early so that you can wake up 30mins earlier to walk around your neighborhood.

Once you make it a habit you will never want to stop and an interesting thing is you will even have regular bowel movement, so exercises can relieve you of constipation.

Water

Is the universal solvent of living matter. It detoxifies, cleanses and invigorates the system. Water should not be substituted with fizzy drinks, beer, ciders etc, when thirsty drink water. Kidneys need water to make it easier for them to filter toxins from the body through urine.

The digestive system also needs water to soften the faecal matter. We need water internally to cleanse our inside just as we need it externally for our everyday bath. Upon rising take 2 glasses of water (you can start with 1 and increase with time) and take 8 glasses during the course of the day.

Do not drink and eat water will wash down your digestive enzymes, drink water before your meal and 30mins - 1hr after your meals.

Smile

Have you actually smiled through a problem? Try it one day, you will be amazed. Smile is a non-verbal communication saying "Even though it might seem badIt is all well in my world".

When you walk into a place and someone gives you a smile, you feel at ease, enriched and welcomed. We loose nothing by giving a smile; you actually send positive energy around the area you are at. Smile!

Temperance

is the ability to restrain yourself from what you know to be bad. It is self mastery; we sometimes are unable to take charge of our lives, we live as if our lives are run externally.

We blame other people when things go bad in our lives. Remember you are the captain of your ship.

Air

The air we breathe gives us life. Once in a while go out to a safe area in the woods/forest and just listen to yourself. The wilderness is therapy. The unpolluted air will activate your mind and soul.

Rest

Is what we occasionally need. We sometimes exert pressure by working very hard without rest. Your body is always talking to you if only we could listen. When you are tired rest! It is very important to set aside a day at least fortnightly when you do nothing but rest.

Trust

It is key to have trust, to trust yourself - to mean what you say, to trust someone close to you and above all to trust the higher force, God, the universe, Allah, Jah what ever you believe in.

When challenges set in you simply surrender to that higher force to take control, what a relief!

We are all spiritual beings; there is goodness in all of us that needs nurturing. Sometimes the blows of life suppress that goodness in us and we end focusing at the evils around us.

Let the goodness flow from you in order for it to come back to you. 🔥

Interlude

3 Wishes

There was a party that many rich people attended. The host had recently built a tank with many crocodiles, snakes, and many other things that could kill you. The host said that if anyone could swim across the tank, he would, to the best of his ability, grant them 3 wishes.

Well, nobody was up to the challenge, so everyone just started having a good time and doing that "party thing."

Suddenly, there was this big splash! The host looked and saw a man swimming to beat hell across the tank, and, lo and behold, he made it!

The host walked over to the man and said, "Alright, you made it, WOW!. What are your 3 wishes?" The man replied, "First, you see that shotgun of yours? give me it, Two, see those bullets over there? give me them, 3, show me the person who pushed me in."

HYPERTENSION: GENERALLY SPEAKING

The World Health Report 2002 identified hypertension, or high blood pressure, as the third ranked factor for disability-adjusted life years, meaning conditions that reduce life-expectancy. Hypertension is one of the primary risk factors for heart disease and stroke, the leading causes of death worldwide.

Recent analyses have shown that as of the year 2000, there were 972 million people living with hyper-tension worldwide, and it is estimated that this number will escalate to more than 1.56 billion by the year 2025. Nearly two-thirds of hypertensives live in low- and middle-income countries, resulting in a huge economic burden.

Awareness, prevention, treatment and control of hypertension is a significant public health measure. The World Hypertension League, through its international member societies, launched World Hypertension Day in 2005 and, due to its success throughout the world; it has been made an annual event. The 2006 World Hypertension Day was held on May 13; the theme of the day was "Treat to Goal", with a clear intent to ensure patient adherence and control of hypertension worldwide. This year the theme is "Healthy eating...Healthy Blood Pressure...Healthy Heart"

The purpose of World Hypertension Day is to communicate to the public the importance of hypertension and its serious medical complications, and to provide information on prevention, detection and treatment. The theme for 2007 is "Healthy Diet...Healthy Blood Pressure". While much of the campaign focuses on lifestyle modifications, treatment and control are also integral aspects. Adherence to lifestyle and therapeutic interventions are also emphasized.

What is hypertension?

Hypertension is a persistent elevation in blood pressure that taxes the heart and can, over time, cause damage to organs such as the kidneys, brain, eyes, and heart. Blood pressure (BP) is the amount of force blood exerts on the walls of the arteries and veins. BP depends on the force and rate of the contraction of the heart as it pumps blood from the left ventricle into the arteries and the resistance to that flow. The amount of resistance depends on the elasticity and diameter of the blood vessels and how much blood is flowing through them.

Everyone needs some blood pressure in their arteries. When your heart beats it pumps blood through the arteries to bring nourishment to the tissues. If the arteries become narrowed or clogged, then the heart has to pump harder to deliver the blood to the tissues, and the pressure in the arteries goes up thus hypertension.

How is it Blood Pressure Measured?

A blood pressure reading is expressed as two numbers and measured in millimeters of mercury (mm Hg). The top number is systolic pressure; it's the pressure in the arteries when the heart beats. The bottom number is diastolic pressure the pressure in arteries when the heart is resting between beats.

Normal blood pressure is systolic below 120 and diastolic below 80. Hypertension is systolic blood pressure at or above 140 mm Hg and/or diastolic blood pressure at 90 mm Hg or higher. "Prehypertension" is systolic pressure of 120-139 mm Hg, and/or diastolic pressure of 80-89 mm Hg. This is the point at which lifestyle changes are recommended to reduce blood pressure. Besides the normal blood pressure measurement at a health practitioner's office, there is also ambulatory blood pressure measurement.

Ambulatory blood pressure monitoring (ABPM) involves measuring your blood pressure for 24 hours as you go about your daily routine and when asleep. You wear a device that measures your blood pressure at regular intervals. The information is recorded on a chip in the device and allows the doctor to get a detailed picture of blood pressure variation in a normal environment.

What Are the Consequences of Uncontrolled Hypertension?

High blood pressure underlies, or goes hand-in-hand with, many disease processes heart disease, stroke, kidney disease, overweight/obesity and diabetes, among others. In short, hypertension can lead to a network of diseases that will result in a further reduced quality of life.

How Can Hypertension be Prevented?

- Weight reduction
- Eating a low sodium diet
- Minimizing alcohol intake
- Regular exercise

If these lifestyle changes do not control or prevent hypertension, then drug therapy is necessary. Control of other risk factors that interact with blood pressure is also important. Smoking, high cholesterol, and diabetes accelerate the damage by high blood pressure on the heart and blood vessels. Therefore, it is important to manage and control all of these factors.

If you already have high blood pressure, pay attention to it and keep it controlled under a physician's care.

The main message for the public is to have your blood pressure checked routinely and to live a healthy lifestyle to prevent hypertension.

The concept behind regular blood pressure checks is just like that of car service. The question is: 'do you change your oil or service your car regularly?' Of course you do and you don't wait until your car is performing badly to do so. Then why do you want to treat you body any differently?! 🔥

HOW MUCH DO YOU KNOW ABOUT HIGH BLOOD PRESSURE?

1. A healthy adult blood pressure is 140/90 :
(True or False)
2. High blood pressure can cause damage to the brain, eyes, kidneys, and blood vessels:
(True or False)
3. Most cases of hypertension are caused by kidney disease :
(True or False)
4. There are numerous factors that may increase your risk for high blood pressure:
(True or False)
5. Most doctors suggest changing your lifestyle before prescribing drugs to treat high blood pressure:
(True or False)

CORRECT ANSWERS:

- | | |
|----------|---------|
| 1. FALSE | 2. TRUE |
| 3. FALSE | 4. TRUE |
| 5. TRUE | |

Diabetic Related Hypertension

Diabetogenic effects of antihypertensive treatment

The recommendations also balance the evidence that some metabolic actions of various blood pressure lowering drugs may favour new onset diabetes. This has been particularly shown for beta-blockers and diuretics, while ACE-inhibitors and angiotensin II receptor blockers may be devoid of such an effect. (9). Beta blockers and diuretics should not be used or only with great caution in hypertensive patients with metabolic syndrome or impaired fasting glucose.

However, in the case of a hypertensive patient with established diabetes they can remain as part of the therapeutic armamentarium aimed at effectively controlling blood pressure values.

Recommendations on antihypertensive treatment in diabetes-related hypertension.

- BP target during treatment <130/80 mm Hg
- if very high risk patients or renal damage BP target < 125/75 mmHg
- Necessary combination of several antihypertensive drugs
- A RAAS blocker should be part of the antihypertensive scheme
- In the presence of micro-albuminuria recommended ace-inhibitors and angiotensin II receptor blockers. ♦

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TB in Diabetic Patients

males appear to be at a somewhat greater risk compared with females.

Patients with TB who develop DM have greater clinical severity at the onset, a greater degree of lung involvement and residual changes. The diabetics who develop pulmonary TB have higher blood glucose levels and develop complications like coma and diabetic micro-angiopathies.

Medical personnel should be aware of the high prevalence of DM among TB patients, as DM is associated with less favourable response to treatment. Glycaemic equilibrium is essential for the success of anti-TB therapy and must be achieved in every patient with co-existent disease.

DM type 2 is a known risk factor for TB and there is a strong relationship between DM and TB with a high prevalence in the young and relatively malnourished patients. Any diabetic who suddenly develops cough, loss of weight, abnormal chest radiograph or needs increased doses of insulin to control blood glucose should be investigated for the presence of TB.

Although there is generous spreading of resources on TB and HIV, attention to the interaction of TB and DM may give way to good benefits.

The awareness that reactivation of latent infection contributes significantly suggests that there may be benefits derived from targeted testing and treatment of latent TB infection in diabetics residing in developing countries. ♦

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Dietary Supplements

Plant Sterols

Plant Sterols and stanols have been persuasively shown to lower cholesterol and are now commercially available in margarine products. Long-term outcome studies with these compounds are needed.

Alcohol

Mild to moderate alcohol consumption has been associated in a variety of reports claiming reductions in rates of stroke and MI, functional improvement of claudi-

cation, and improved cardiovascular survival.

Vasodilating and CNS effects, as well as the antioxidant properties of compounds in alcohol preparations such as red wine, have all been proposed as potential mechanisms of these benefits. At higher doses in susceptible individuals. However, alcohol is a well-known myocardial toxin, with equally deleterious potential to other organ systems. ♦

URINARY TRACT INFECTIONS

Urinary tract infections, or UTIs for short, are the result of an overgrowth of bacteria in the urethra, bladder, or kidneys, which can then be detected in urine. Otherwise urine is usually sterile. Urinary tract infections are caused by a variety of bacteria, but 85% of UTIs are started by E. coli. E. coli usually lives in the colon, but sometimes these bacteria can creep into the urethra, causing painful infection.

The urinary tract is made up of two sections: the lower urinary tract and the upper urinary tract. Infections most commonly occur in the lower urinary tract, which contains the bladder and urethra. Infection of the urethra, or urethritis, occurs when bacteria, usually from the rectum, travel into the urethra and grow there. Bladder infection, or cystitis, occurs when bacteria travel up past the urethra and lodge in the bladder. Bladder infections are the most common form of UTI, and can often occur at the same time as urethritis.

The upper urinary tract contains the two kidneys and the tube that connects them, called the ureters. If a lower urinary tract infection is not treated, the bacteria can easily travel up the ureters into the kidneys, causing chronic urinary tract infections. A kidney infection is called pyelonephritis, and requires immediate care. Kidney infections can cause kidney damage or even failure if left untreated for an extended period of time.

Symptoms of Urinary Tract Infection

Urinary tract infection symptoms include a powerful urge to urinate, and a painful,

burning sensation when urinating. Infected people may also be unable to empty their bladder completely when they try to urinate, and sometimes only a tiny amount of urine can be expelled. Other symptoms of a urinary tract infection include cloudy or smelly urine, nocturia or urinating at night or bloody urine.

Simple lower urinary tract infections generally have few other symptoms. More serious upper urinary tract infections may cause nausea, vomiting, chills, fever, dizziness, and pain in the lower back and abdomen. If you have these symptoms, contact your health care provider.

Causes of Urinary Tract Infections

Urinary tract infection causes are numerous. Some are easily preventable, while others are more difficult to stop. Here are some common methods of bacterial transmission:

- Wiping back to front after bowel movements. This can spread E.coli from the rectum to the urethra in women.
- Frequent sexual intercourse. Women can easily become infected with the bacteria because of constant movement and thrusting of her partner's penis.
- Pregnancy. Vaginal birth can cause trauma to the bladder, preventing urine from being expelled.
- Menopause. Changes in hormone levels cause physical changes resulting in ease of infection.
- Kidney Stones. Hard deposits of

calcium that resemble small rocks can block the bladder, preventing all urine from being expelled.

A compilation of statistics was carried out at Diagnofirm Medical Laboratories for the period 1st January 2006 to 31st December 2006 and the following statistics were found between males and females.

Category	Count	% Positives
Total Number of samples done	3669	636(17.33)
Males	1448	% Positives 180(4.91)
Females	2221	% Positives 456(12.43)

Altogether 3669 urines samples were tested for culture 1448 males and 2221 females. Among these 636 (17.33%) showed growth for specific organisms.

Analysis of Data :

- E.coli is the leading cause in both males and females.
- Group B strept is prevalent in women. During the same period Group B strept was isolated from UGA samples from women.
- Group D strept features quite significantly in both groups.
- Proteus is quite pronounced in females.
- The rest of the organisms account for a very small percentage of UTIs. 🔥

Male Statics

E.coli	Group D Strep	Proteus	Group B Strep	Klebsiella	Staph Aueus	Pseud
77	33	32	23	6	5	4
42.8%	18.35	17.8%	12.8%	3.3%	2.7%	2.2%

Femal Statics

E.coli	Group B Strep	Group D Strep	Proteus	Kleb	Staph Aueus	Pseud
202	77	71	66	28	9	3
44.3%	16.88	15.27	14.47	6.14	1.97	0.66

Interlude

ON THE BUSES

A drunken man gets on the bus late one night, staggers up the aisle, and sits next to an elderly woman.

She looks the man up and down and says, "I've got news for you. You're going straight to hell!"

The man jumps up out of his seat and shouts, "Man, I'm on the wrong bus!"

DIAGNOFIRM MEDICAL LABORATORIES NOW SANAS ACCREDITED!

After having grown to a big organization that was well renowned for its excellent services, Diagnofirm decided to put measures in place that would assure the public that the services they were getting from Diagnofirm were of world class standards. This saw the beginning of the implementation of a Quality Management System (QMS). A QMS can be defined as a set of policies, processes which are required in order to plan and carry out the work related to the core business of an organization. A QMS integrates the different in-house processes within an organization and intends to provide a process approach for accomplishing required results. A QMS enables an organization to categorize, evaluate, control and improve the different core business processes that will eventually lead to improved performance in an organization.

Diagnofirm then applied for accreditation with the South African National Accreditation System (SANAS). SANAS is recognized internationally as an Accreditation Body that gives formal recognition that Laboratories are competent to carry out specific tasks.

SANAS is an independent body competent enough to assess organizations for compliance to the relevant international/national standards and verifying their appropriate competence for tasks per their scope of activities. SANAS accreditation benefits accredited organizations through an impartial assessment by experts on their performance. This independent assessment and recognition of an organizations' competence allows the accredited organizations tests, inspection reports and certificates to be recognized as equivalent to organizations in other countries accredited by their National Accreditation Bodies with which SANAS has concluded a Mutual Recognition Agreement (MRA).

SANAS participates in and is currently represented on the major committees in the accreditation arena and also participate in the assessments of other national and regional accreditation bodies. The benefit derived from these activities to the SANAS accredited organizations is an assurance that the rules applied to the SANAS

accredited organization is no less or more than those applying to other accredited organizations in the world.

At the helm of world accreditation bodies is the International Laboratory Accreditation Cooperation (ILAC) and the International Accreditation Forum (IAF) both of which SANAS is a member. This establishment of international network of accreditation bodies ensures that the competence of laboratories are assessed on the same principles, regardless of where in the world they are located as dictated by the ISO standards.

After a successful document review the initial assessment for accreditation was on the 27th and 28th of November 2006. This was a successful exercise which resulted in the assessors recommending Diagnofirm for accreditation. On the 20th of April 2007 the SANAS approvals committee approved and granted Diagnofirm accreditation status. This is a major achievement for Diagnofirm and goes a long way in fulfilling our vision of being the best medical laboratory in Botswana and beyond.

The accreditation of Diagnofirm should be viewed as a way of ensuring that all users of our services get services that are accepted the world over.

From the Quality Department at Diagnofirm, we hope the implementation of a QMS and the subsequent accreditation will go a long way in improving the healthcare service in Botswana, and like we always do at Diagnofirm, inspire the rest to follow the trail! While we celebrate the monumental achievement, we eagerly await our next challenge.



SANAS Laboratory Number M 0277

JOKES CORNER

24 hour grocery

Last night I went to a 24-hour grocery. When I got there, the guy was locking the front door.

I said, "Hey, the sign says you're open 24 hours." He goes: "Not in a row!"



My kinda girl

I always look for a woman who has a tattoo. I see a woman with a tattoo, and I'm thinking, okay, here's a gal who's capable of making a decision she'll regret in the future. - Richard Jeni, Comedian / Actor



Cheating wife

A guy tells his psychiatrist: "It was terrible. I was away on business, and I emailed my wife that I'd be back a day early. I rushed home from the airport and found her in bed with my best friend. I don't get it. How could she do this to me?"

"Well," says the psychiatrist. "Maybe she didn't get your email."



Some Nice ideas for Car Bumper Stickers

1. 99 percent of lawyers give the rest a bad name
2. DRIVE LIKE HELL.. YOU'LL GET THERE!
3. Everyone has a photographic memory. Some don't have film facility
4. Hard work has a future payoff. Laziness pays off NOW
5. Some people are only alive because it is illegal to shoot them
6. Learn from your parents mistakes - use birth control
7. Work hard, the people on welfare depend on you!
8. Your ridiculous little opinion has been noted.
9. Hang up and drive!
10. Try not to let your mind wander...It is too small and fragile to be out by itself
11. Don't laugh at my ride, your daughter may be in it!
12. Everyone has the right to be stupid but you abuse the privilege.