



DIAGNOSTICS

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Freaky Dreams

**Heart of a
Woman**

**Regeneration of
Cornea**

Dyslexia

**Best Testing Strategy
for HIV**

Meningitis

Pathology you can trust!



Editor's Note



Remember this in the coming year:

“When working toward the solution of a problem, it always helps if you know the answer.”

And:

“Every solution breeds new problems.”

I am a big fan of Murphy's Law. You know the one that says: "If anything can go wrong, it will."

Not because my life is a living testimonial of the validity of this law—which it is—because everything that can go wrong, it has in my life. But because this adage is so apt, it actually has become an alibi for things that do go wrong, even if they are not strictly due to the application of Murphy's Law.

Take this newsletter for example. I have sincerely tried to get it going and make sure it comes out when it is due. Yet, the forces that be, Murphy's Law or not, have basically shackled my hands and feet so strongly that I couldn't even move. I can literally see Mr. Chand shaking his head with disappointment.

But, it is now here, in your hands, better late than never, waiting for your criticism, good or bad. I would actually prefer negative feedback to no feedback, because that's exactly what I received from the last issue. I was hoping to hear from someone, anyone, about the effort, but I heard nothing but static.

Once again—and stop me if you've heard this before—we'll make sure that the next issue is on time. It has to be; I mean how many times can I use Murphy's Law before it

becomes inapplicable. I can use some help though. I am looking for submissions. There are millions of topics that need to be covered but it requires time and effort. If you are willing to put in such time and effort, we can showcase your expertise in the pages of this newsletter. There is no monetary reward because the newsletter is intended as a public service, but there is plenty of reward in goodwill and maybe some publicity for you and your related entity.

One thing though, as much as we all love Wikipedia, we can't simply cut and paste content from it. Articles submitted must be original. There are resources we can use as part of our research, but in the end, verbatim copying is not the way to go.

This year has been topsy-turvy because of all the changes, locally and internationally. Let's hope the cycle turns to positive and we can look forward to a new year that really brings good cheer for all of us. We wish you a happy festive season and a wonderful new year. We hope that all of us will come back with new vigor and enthusiasm in January. :-)

M.A. Naem

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Limbal: Located at the border between the cornea and conjunctiva, this is where corneal epithelial stem cells are found

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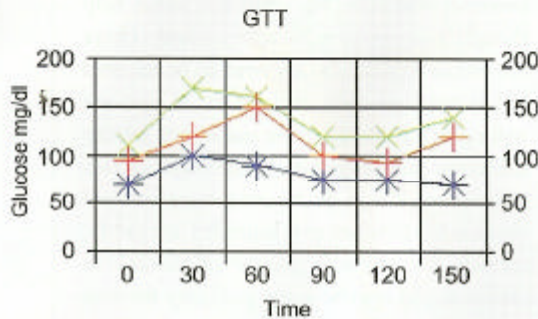
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what's
new at
Diagnofirm

Laboratory Information System



Diagnofirm in its continuous endeavour for better quality services to customers and doctor's fraternity have recently upgraded our self to New Laboratory Information System. We would like to enlighten certain special features about our New Laboratory Information System.

- b) Automatic SMS to Medical Aid Patients regarding delivery of reports to the Doctors;

Graphical Display of Results:

In yet another first in Botswana, we in Diagnofirm have started reporting results in Graphical Format also, which will provide scope for more clarity on reports.

Processing Time:

In order to reduce the processing time we have introduced Bi-Directional Interface. Bi-directional interfacing in an environment that is completely barcode enabled will help the scanner read the barcode on the sample, selects the test to be done for the sample, decodes the results and transfer them to the system.

Membership Card:

We are proud to introduce Membership Card which enables for faster capturing of patient information in our system at the time registration of patients which will reduce the waiting time for patients to be helped.

Quality Control:

We have instituted Quality Control Online Monitoring System, whereby it captures all Quality Control Reports from machines. The values can be displayed graphically for monitoring. ♦

Effective Dissemination of Results:

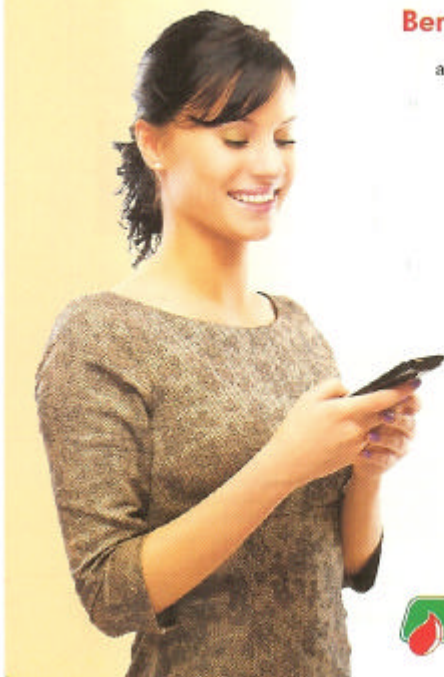
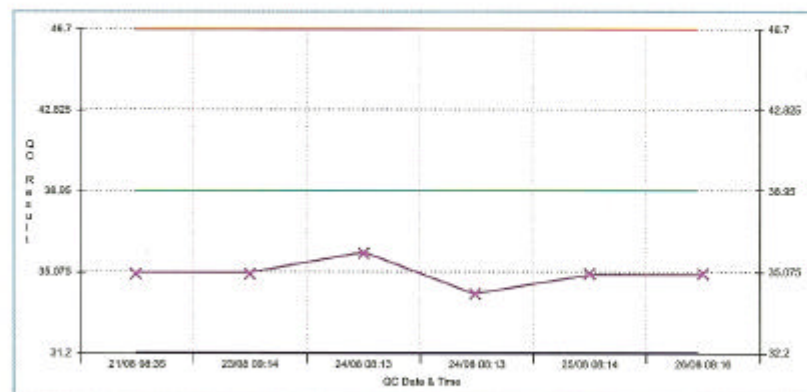
We in Diagnofirm sincerely believe that any kind of information will be effective to users and decision making authorities only if the information is disseminated at proper channel to the appropriate person at appropriate time. Considering the importance of information or patient results in our case reaching the doctor's desk at the earliest possible time to help the doctors in their investigation, we have made following features to our New Laboratory Information System.

Benefits to Doctors:

- a) Automatic email to doctors upon authorization of results.
- b) Automatic SMS to Doctors in case of Critical Results along with Patient Details to enable the doctors to communicate;

Benefits to Patients:

- a) Automatic SMS to Private Patients regarding readiness of the results upon authorization;





News & Updates

Another first for Diagnofirm



Diagnofirm Medical Laboratories' ISO/IEC 17025:2005 Accreditation Certificate expires in April 2011, so SANAS (South African National Accreditation System) sent its team of Assessors to carry out a Re-Assessment for the renewal of Accreditation and also for the assessment of our Cytology department. It is our pleasure to announce that we passed this with flying colours and we now boast of the first accredited Cytology Laboratory in Botswana.

In order to be accredited, an organization has to comply with all the requirements of the applicable international standards and demonstrate that compliance through an assessment of the system. This assessment is carried out by an Accreditation Body, in our case SANAS. SANAS is a member of the International Laboratory Accreditation Cooperation (ILAC). ILAC counts as its members, laboratory and inspection accreditation bodies representing more than 70 economies and regional organizations.

As an accredited laboratory it means Diagnofirm Medical Laboratories is recognized for its competence in performing laboratory tests and in following international standards as stipulated in the ISO/IEC 17025:2005 requirements for testing laboratories. This means that our clients can be assured that when they get a test result from Diagnofirm Medical Laboratories, they know that the testing was of the highest quality conforming to international standards. The result they get from Diagnofirm is accepted in most countries. They are also assured that the personnel who handled their samples from patient registration, sample collection, processing, validation and release of results are highly qualified and competent to perform these duties.

Diagnofirm Medical Laboratories management and staff are committed to maintaining these high standards and also finding ways to continually improve so as to give our clients the best possible service. ♦



Concept: M.A. Naeem • Artist: Fidel Nyakurimwa

World's First Noninvasive Continuous Temperature Monitoring System



Based on the groundbreaking discovery by Yale researcher, Dr. Marc Abreu, of the Brain Temperature Tunnel (BTT), Brain Tunnelgenix Technologies Corp.

has developed revolutionary technology that will transform human temperature measurement. Offering the first advance in modern thermometry in 300 years, now, for the first time, human brain temperature and core temperature can be noninvasively and continuously monitored, the same as other vital signs—heart rate, blood pressure, and respiratory rate.

Abreu BTT 700 System is a computer-based system that features a far-infrared sensor that is placed on noninsulated skin between the eye and the eyelid (ie, at the inner corner of the eye), creating a direct and undisturbed link ("tunnel") to the thermal storage area in the brain.

The technology avoids interference from



elements (eg, fat) that absorb the far-red infrared radiation that is transmitted as heat from the blood to the brain, and also bypasses barriers that insulate the brain, such as the scalp, cerebrospinal fluid, and meninges.

The system can be used during surgical procedures, replacing the traditional

esophageal or Foley catheter-based monitoring devices that represent a significant source of potentially deadly infection. Additional applications include recovery room, intensive care unit, and general patient monitoring.

"[M]edical professionals and researchers will now have access to the first product in history that enables temperature to be continuously monitored on the only truly thermoconductive skin in the body," said Rick Foreman, chief executive officer of Brain Tunnelgenix, in a company news release. "This breakthrough will enable clinicians to escape their dependence on invasive thermometry and surface measurements across thermal barriers. With the exception of putting a sensor directly inside the brain, studies have shown that the [brain temperature tunnel] is the only sensor capable of detecting brain hypothermia and harmful cerebral hyperthermia."

Other benefits of the system include remote (wireless) monitoring of patient temperature from the nurse's station, eliminating middle-of-the night temperature checks, and early detection of infection, thereby potentially improving therapeutic efficacy. ♦

Medscape



Breastfeeding May Lower Moms' Diabetes Risk



Breastfeeding for a month or longer appears to reduce a woman's risk of getting diabetes later in life, according to a new study by Dr. Dleanor Bimla Schwarz, assistant

professor of medicine at the University of Pittsburgh School of Medicine. The study was published in *The American Journal of Medicine*.

The researchers evaluated data on 2,233 women. Of those, 405 were not mothers, 1,125 were mothers who breastfed for at least a month, and 703 were mothers who had never breastfed.

The risk of getting a diagnosis of type 2 diabetes for women who breastfed all their children for a month or longer was similar to that of women who had not given birth. But mothers who had never

breastfed were nearly twice as likely to develop diabetes as women who had never given birth.

While one month of breastfeeding appears to make a difference, Schwarz says even longer is better. "Previous studies have shown the longer the mom breastfeeds, the more benefit for her body."

"Many experts recommend exclusive breastfeeding for six months and continuing [supplemented by food] for a year", she says.

WebMD

Nitrate Linked to Alzheimer's Disease, Diabetes, Parkinson's Disease

A study conducted by researchers at Rhode Island Hospital, and published in the *Journal of Alzheimer's Diseases*, shows a direct link between increased levels of nitrates in our food and environment and increased risk of diseases like Alzheimer's disease, diabetes mellitus, and Parkinson's disease.

Researchers found strong parallels between age adjusted increases in death rate from Alzheimer's, Parkinson's, and diabetes and the progressive increases in human exposure to nitrates, nitrites, and nitrosamines through processed and preserved foods, as well as, fertilizers.

Other diseases including HIV/AIDS, cerebrovascular disease, and leukemia did not exhibit those trends. ♦

Healthnewstrack

New Treatment for Advanced Melanoma Shrinks Tumours

An experimental targeted cancer drug shrank advanced melanoma tumours in 81 percent of patients with the deadly and hard-to-treat cancer. The findings were part of an early phase study used to determine the best dose of the experimental drug PLX4032, now in late-stage clinical trials. It is designed to target tumour cells with a mutation in a gene called BRAF. The drug is made by Roche and privately held Plexxikon.

In two patients, tumours went away completely. In 24 others, the tumours shrank by more than 30 percent, the team reported in the *New England Journal of Medicine*. But the effects appear to be temporary. In all but two cases, where cancer has stayed away for at least a year, the benefits only lasted for six months.

The hope is to combine the drug with other treatments to produce a long-lasting effect, comparable to the AIDS cocktail that maintains the health of many people with HIV. One such candidate is Bristol-Myers Squibb's experimental drug *ipilimumab*, which is the first treatment shown to extend lives of patients with advanced melanoma, more than 20% of which were alive two years after treatment with *ipilimumab*.

Ipilimumab or "ipi" is a monoclonal antibody, an engineered version of a human protein that targets CTLA-4, a molecule that acts like a brake on the immune system.

Melanoma is the most aggressive form of skin cancer, affecting 160,000 people worldwide each year. When melanoma has spread, conventional chemotherapy is typically effective only in 10 percent to 20 percent of the cases. ♦

MSNBC.com



hot
topic

A Different Kind of Eyeglasses

The Wall Street Journal



Most people in their forties start to experience difficulty in focusing on close objects and need glasses to be able to read. This condition is called *presbyopia* and generally requires reading glasses, bifocals, or glasses with progressive lenses. Only problem is that while glasses help focus on small objects, they tend to cause blurriness if one tries to look up and see objects that

are at a distance.

Most lenses have a fixed range of focus and at any given time, only part of one's field of vision has focus. These lenses then work only for one activity. A person wearing them has to either remove them when that activity is interrupted or has to wear a totally new set of glasses when the depth of focus changes. That's why reading glasses don't work when working on a computer or when watching television. Each activity requires a different strength of lens and a different set of glasses.

In addition, as a person ages, the eyes require a stronger lens to focus the aging eyes onto objects within the same distance. Wouldn't it be nice if there was one pair of glasses that could adjust to different distances, thus eliminating the need to have multiple sets for variable activities?

Well there is one now, thanks to Zoom Focus Eyewear LLC, from California. Their invention, TruFocals, has won Silver Innovation Award for

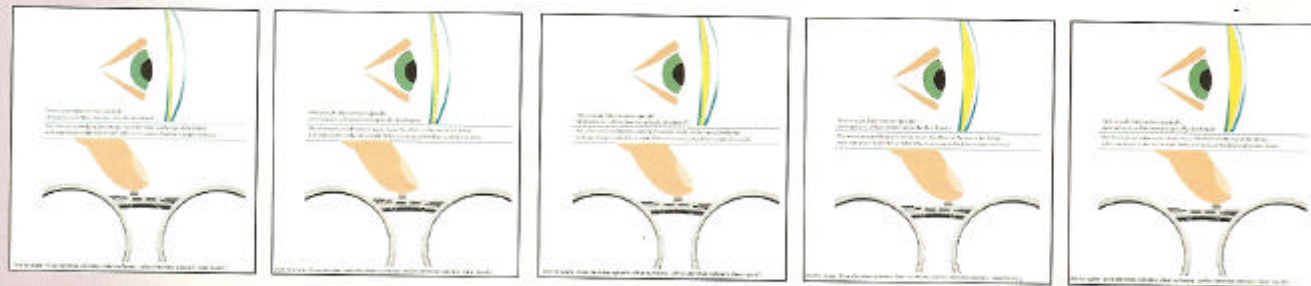
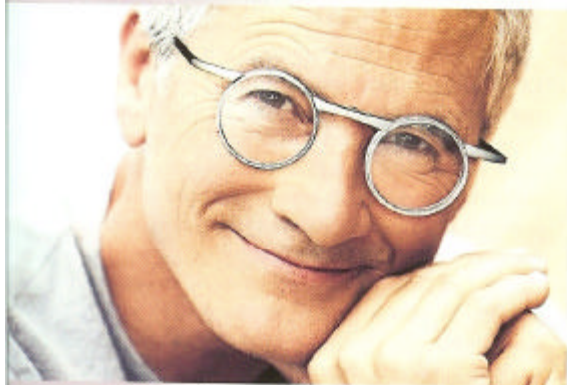
causing a "paradigm shift in the way it addresses a problem that has been handled the same way for many years", as one judge put it. These glasses are manually adjustable to "give the person wearing it a clear, undistorted vision" at any distance where focus is required.

The idea of adjustable eyeglasses has been around for hundreds of years, with a patent filed as early as 1866, but a workable product is only possible now. For over a century, scientists failed to produce glasses that are "easy to adjust, thin, lightweight, and accurate." Stephen Kurtin, a California inventor, worked for close to 20 years to make such glasses a reality. First model actually weighed seven pounds but after much hard work, he created TruFocal eyeglasses (to be rebranded as Superfocus glasses, company to be rebranded as Superfocus LLC) that mimic the way human lens stretches and contracts to adjust focus.

Each TruFocal lens is actually a set of two lenses: an outer lens and an inner lens made of flat glass plate attached to a flexible membrane that contains a clear, silicone-based liquid. A manual slider on the bridge of the eyeglasses adjusts the focus by changing the shape of the membrane. The outer lens can be custom made to correct other vision problems besides presbyopia, including nearsightedness and astigmatisms.

Once the TruFocal lenses are adjusted, the entire field of vision is in focus, unlike bifocals and progressive lenses, which keep only a limited area in sharp focus, thus giving the wearer the ability to manually focus on objects ranging from a book to a mountain range.

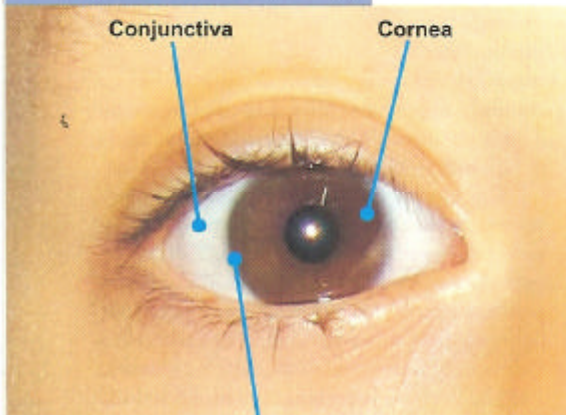
There is a downside. The glasses only come in one shape – round. Only circular lenses work for the technology. Any other shape makes it impossible for the flexible membrane to keep a spherical shape when compressed. On the upside, one can look like Harry Potter at any time. :-)





Regeneration of Cornea

New England Journal of Medicine



Limbus: Located at the border between the cornea and conjunctiva, this is where corneal epithelial stem cells are found

alterations in the normal, curved shape of the cornea can cause astigmatism, nearsightedness and farsightedness. At the same time, transparency of cornea is critical to allow light to enter unhindered.

Our eyes are our window to the world. Light reflecting from objects enters our eye through the cornea, which is a clear, round, window in the front of our eyeball. The purpose of the cornea is to bend and refract light so that images can focus on the retina and travel to the brain, thus enabling us to see. The integrity of the cornea is essential for our vision because any

Any loss of transparency leads to partial or complete blindness.

A healthy and transparent cornea is maintained by constant renewal and repair of its upper layer, or epithelium, which is completely renewed every 9 to 12 months. This renewal and repair is mediated by stem cells of the limbus, which is a narrow border between the cornea and the conjunctiva. When the

limbus is damaged due to injury, chemical exposure, or burns caused by hot liquids or fire, there is resultant deficiency in the supply of limbus stem-cells, which then affects the ability of our eyes to repair and renew cornea. The bulbar conjunctival cells then invade the cornea, thus leading to chronic inflammation, scarring, and opacity, thus resulting in loss of vision.

Treatment options for such cases generally involve corneal transplant from donors (keratoplasty) or artificial cornea. Such transplants restore transparency only temporarily. Eventually conjunctival cells invade again and take over the surface of the new cornea. Again, the cause of failure is absence of viable limbal stem cells to continue the regeneration of cornea.

In 1997, Italian researchers Dr. Graziella Pellegrini and Dr. Michele De Luca demonstrated for the first time that transplanting cultured corneal epithelium into such patients suppressed

the invasion of the conjunctiva. For the next decade, Dr. Pellegrini and colleagues refined their methods and treated patients with their technique. The results of their study were published this year in the *New England Journal of Medicine*, showcasing the success of their regenerative stem cell treatment with striking success.

Patients with varying degrees of limbal stem-cell deficiency were included in their study. A total number of 106 patients participated between 1998 and 2007. Most had extensive damage in one or both eyes and had very limited vision where they could only sense light, count fingers, or perceive hand motions. Many of them had been blind for years, one for as long as 60 years, and all had previous alternative treatments.

Their method involved removal of a healthy biopsy specimen of 1 to 2 mm² from the patient's healthy eye or part of the eye which was not damaged. This sample was then cultured on fibrin to produce autologous cultured corneal epithelium, which was then transplanted onto and around the cornea. Since cells come from the person being treated, there was no rejection of the graft as opposed to when stem cells from a foreign donor were used.

The outcome of the treatment was assessed at 1 year. The treatment was considered a success if it restored a transparent and stable corneal surface. It was partially successful if most symptoms disappeared, even though it was not completely stable. It was considered a failure if corneal defects recurred and inflammation reappeared along with invasion of cornea by conjunctival cells.

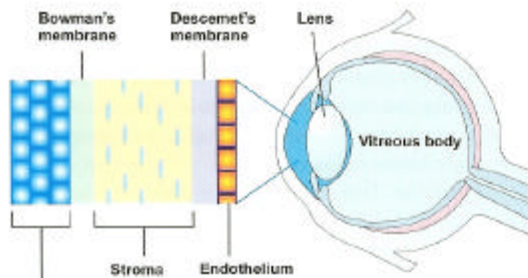
Out of 106 patients, 82 were a complete success, 14 were a partial success, and 11 were determined to be a failure. For successfully treated patients, vision improved within months. Researchers followed the patients for many years, some for over a decade, and found the restoration of their vision to be stable.

Conclusion drawn from this study is very convincing that cultures of limbal stem cells are a source of cells for transplantation in the treatment of burn-induced destruction of human cornea.

According to Dr. Pellegrini, "The patients were incredibly happy. Some said it was a miracle." She further added, "It was not a miracle. It was simply a technique."

The treatment "is like putting on a biological contact lens," said Dr. Stephen Pflugfelder, a practicing corneal specialist and professor of ophthalmology at Baylor College of Medicine in Houston, who says the technique works well. ♦

Structure of cornea

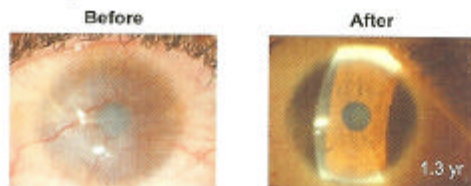


Epithelium: The outermost layer of the cornea, composed of corneal cells

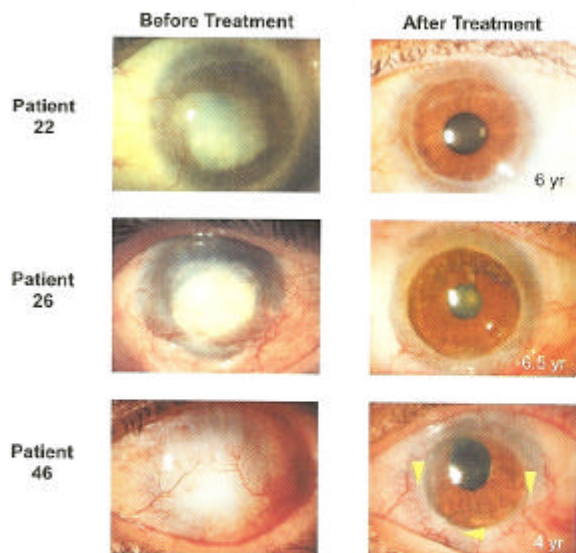


Regeneration of a Functional Corneal Epithelium and Restoration of Visual Acuity

A Cultures Only



B Cultures plus Keratoplasty



Panel A shows the left eye of a patient who had total limbal stem-cell deficiency due to an acid burn (image at left.) His visual acuity was reduced to counting fingers. A graft of autologous limbal cultures was sufficient to regenerate functional corneal epithelium (image at right) and to restore normal vision (visual acuity, 0.7), since the eye had no stromal scarring.

Panel B shows the eyes to three patients, which were damaged by alkali burns and were treated with unsuccessful surgery 13, 30, and 3 years before admission, respectively. All three eyes had total limbal stem-cell deficiency, complete corneal opacification, and stromal scarring (images at left). Vision was reduced to counting fingers (first patient) or perceiving hand movements (second and third patient). In all three patients, autologous limbal stem-cell cultures successfully regenerated functional corneal epithelium. To improve their visual acuity after grafting, the patients underwent penetrating keratoplasty. In all three eyes, the engrafted limbal stem cells resurfaced the donor stroma. At the last follow-up visits (at 6, 6.5, and 4 years, respectively), all eyes were covered by stable corneal epithelium (images at right). The keratoplasty resulted in complete restoration of visual acuity in first and third patient (0.9 and 0.8, respectively). The visual acuity of second patient increased to only 0.3 because of a concomitant amblyopia (the alkali burn had occurred 30 years before admission). In third patient, the follow-up image shows that the conjunctival vessels stop at the conjunctival-corneal boundary (arrowhead); they do not invade the restored corneal surface.

Photo from: NEJM

From Darkness to Light: Giving Sight to the Blind

Blindness—once relatively ignored by research scientists—has in recent years received greater attention and increased funding, all driven by expectations of increasing numbers of cases of blindness in an aging population.

Around the world, “bionic eyes” are under development. Majority of the world’s leading researchers working on these inventions are focused on developing intraocular retinal implants—small microprocessor chips embedded in the eye, which send a message through the optic nerve to the brain.

One group of researchers at the Wilmer Eye Institute at Johns Hopkins Medical Center in Baltimore has paired a tiny television camera with something called an ultrasonic distance sensor (mounted on a pair of eyeglasses). The glasses send the signal to the sensor, which sends a signal to a microcomputer chip embedded on top of the retina—which transmits signals to the brain’s visual cortex, the area of the brain that controls vision. When the camera sends a video signal to the small processor, the image is streamlined.

It basically pares the image down to the most important components, like edges and contrast—so a person can see the outlines of a face, see a doorway, obstacles in their path, things like that. As the technology gets better, along with better implanting techniques, the image will get finer with better resolution. Patients will then be able to distinguish big letters, possibly read a label or a short piece of text.

Another version of a bionic eye being developed by Optobionics in Chicago integrates all components into one chip implanted below the retina of the eye; it’s called the Artificial Silicon Retina. The design of this chip is relatively simple and may be able to function solely with the power provided by light entering the eye. The artificial silicon retina is made up of thousands of microscopic solar cells that convert light into electrical impulses and is capable of electrically stimulating the remaining cells in the retina when implanted into the eye.

Yet another development under way at various institutions—the Dobbelle Institute in New York, the University of Utah, and the Kresge Eye Institute in Detroit—focuses on creating a new cornea or eye altogether by using some of the mechanics already mentioned but then bypassing the eye entirely.

One version, the Dobbelle Eye, consists of a subminiature television camera and an ultrasonic distance sensor, both mounted on a pair of eyeglasses. The sensors connect through a cable to a miniature computer, which is worn in a pack on a person’s belt. The computer then sends impulses to electrodes that are implanted directly into the patient’s visual cortex area in the brain. In one report, a 62-year-old man blinded in an accident was able to read 2-inch-tall letters at a distance of 5 feet—enough to help him navigate in unfamiliar environments.

Science fiction is becoming less fiction and more fact every day. ♦

WebMD



What's the Best Testing Strategy for HIV Infection?

Proposed Algorithm Incorporates Latest Technologies, Testing Priorities

Gemma Rollins, *Clinical Laboratory News*, November 2010



Knowledge about all aspects of human immunodeficiency virus (HIV) epidemiology, diagnosis, treatment, and prevention has advanced significantly since scientists first isolated the virus in 1984. But in a field characterized by rapid breakthroughs, one thing has remained unchanged for more than 2 decades: the diagnostic testing algorithm recommended by the Centers for Disease Control and Prevention (CDC). Since 1989, the diagnostic standard for HIV in the U.S. has involved initial screening

with an enzyme immunoassay (EIA), followed by validation of repeatedly reactive specimens using a more specific test such as Western blot or immunofluorescence assay. This strategy has served its purpose well, but now public health officials are poised to overhaul the current algorithm completely to reflect the latest diagnostic technologies and challenges.

"Western blot testing and the current algorithm were initiated at a time when all we had were antibody tests, so we were stuck trying to make a diagnosis from a single test," explained Bernard Branson, MD, associate director of laboratory diagnostics in the division of HIV/AIDS prevention in CDC's National Center for Viral Hepatitis, HIV, STD and TB Prevention. "Now, we have these other alternatives that weren't available in the past, and labs are using them. So people recognize that the Western blot is a bit tarnished for several reasons."

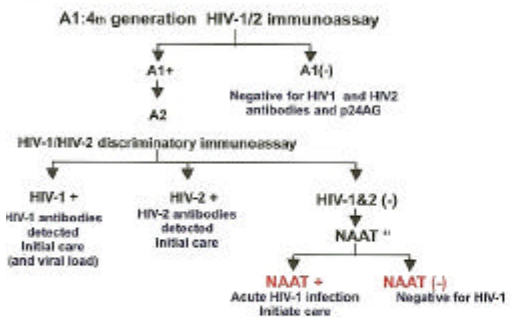
Branson presented a proposed algorithm at the 2010 CDC-American Public Health Laboratories (APHL) HIV Diagnostics Conference, which took place last March. The algorithm came from ongoing collaboration between the two organizations through the APHL/CDC HIV Steering Committee.

nuanced understanding of HIV, making now an ideal time to introduce a new algorithm, according to Eugene Martin, PhD, professor of pathology and laboratory medicine at the UMDNJ-Robert W. Johnson Medical School in New Brunswick, N.J. "The proposed algorithm is setting the stage for a major shift that's absolutely appropriate and in some respects is late in coming," he said. "It gives us a tremendous opportunity to shorten the cycle time to find out whether a person is infected, and if so, to do something about it."

In the past 2 decades, HIV diagnostics have advanced from first-generation EIAs, which detected antibody bound to solid-phase viral lysate, to third-generation EIAs, which detect antibody using an antigen-antibody-antigen sandwich method. Earlier this year, the Food and Drug Administration (FDA) approved the first fourth-generation test for use in the U.S., Abbott's HIV Ag/Ab Combo assay, which detects both HIV-1 and HIV-2 antibodies and the HIV p24 antigen. Bio-Rad has submitted a premarket approval application for a similar assay. Ortho Clinical Diagnostics also is developing a fourth generation assay and plans to submit for FDA approval, according to a company spokesperson.

While the FDA requires sensitivity and specificity of HIV EIAs to exceed 98%, different antigen targets and assay formats have made it possible to detect a broader range of HIV subtypes, groups, and antibody isotypes from saliva, whole blood, serum, or plasma specimens. The introduction of rapid HIV tests, first approved by the FDA in 2002, has sped-up turnaround time for screening results and enhanced the role of point-of-care contact in HIV testing and counseling. Diagnostic manufacturers also have developed nucleic acid amplification tests (NAAT), making it possible to identify an HIV infection before seroconversion. While all these advances are significant in their own right, the bottom line is that a positive HIV diagnosis is now possible up to 26 days prior to positive results by Western blot, the recommended confirmation test (*J Clin Microbiol* 2008;46:1588-95). This has real implications for public health officials focused on stopping the spread of HIV infection and getting newly infected patients into therapy as soon as possible.

"There's been a growing body of literature recognizing the importance of that window period between the time of infection and the time the infection is detected," said Peter Leone, MD, professor of medicine and medical director of the North Carolina HIV/STD prevention and control



Technology-Driven Change

Over the years, laboratorians and clinicians have watched the Western blot assay slowly being left in the dust by new technologies and an increasingly

branch at the University of North Carolina in Chapel Hill. "It's important at the individual level in that we're missing people very early on when there's a chance to impact long-term their infection by starting them on therapy and linking them to care. And it's important from the public health perspective to decrease transmissions within networks." Leone and his colleagues have published on their experience in detecting acute HIV infection using NAAT (*N Engl J Med* 2005;352:1873-83).

Finding the Right Testing Strategy

CDC's 2006 guidelines recommending routine, voluntary HIV screening for all individuals age 13-64 in healthcare settings expanded the scope of testing, but providers still have not made huge inroads with a critical sub-group. CDC data indicate that about 21% of the population with HIV is unaware of it. Yet these individuals are responsible for more than half of new HIV infections, reflecting the fact that acute infection is more communicable than long-standing illness. "As we've learned more about HIV, acute HIV, and expanded testing, particularly to high-risk groups, the importance of that acute period has actually increased. But we're looking at a widening gap of people either being missed by antibody testing or having discrepant results, yet they're infected," Leone added. Although there's considerable focus on identifying acute infection, public health officials also place priority on catching more people earlier in the course of infection who are past the acute infection stage. A sizable minority of patients continue to be diagnosed late in the disease process, about 1 year before developing AIDS. To the extent that the proposed algorithm would help identify them sooner, for example, by getting definitive results more quickly for anyone who is tested, it would be welcomed, according to Branson.

APHL and CDC have proposed several alternative algorithms over the years, but none quite hit the mark in terms of testing strategy priorities, so they were never advanced to the point of formal endorsement. For instance, two preliminary algorithms called for either HIV-1 EIA only or HIV-1 and HIV-2 EIAs followed by NAAT for repeatedly reactive results. "There are two difficulties with that. One is, somewhere between three and seven percent of cases confirmed as antibody-positive tested negative for RNA, so RNA alone was not sufficient to confirm HIV infection," Branson explained. "Secondly, if you were to immediately perform an RNA test, you wouldn't be able to tell if the person had acute or long-standing HIV infection, because both of those people would be RNA positive."

In recent years, public health officials also have become concerned about identifying HIV-2 infection, which is growing in prevalence in the U.S. and has a different treatment approach than HIV-1. "There's a misperception that HIV-2 is not a problem in certain areas of the country," noted Barbara Werner, PhD, an infectious diseases consultant to the Massachusetts Department of Public Health. "It certainly is less of an issue outside some of the eastern cities like New York that are ports of entry from around the world. However, people from HIV-2 endemic areas are settling in other parts of the country, and if you don't look, you're not going to find it." Werner represented APHL during an AACC webcast titled "An Update on HIV Testing: New Tools and Optimized Algorithms," which was held on September 16.

A Tarnished Gold Standard

Aside from being less sensitive than many screening assays,

Western blot has other liabilities, not the least of which is turn-around time. "An individual can be found to be preliminarily positive with a rapid HIV test, but the current algorithm requires the specimen to be confirmed with Western blot, which is a fairly complex test that can't be performed in some locations where rapid HIV tests are performed," explained Martin. "The Western blot results have to be analyzed, returned to the sample collection site, and then you have the issue of getting back to that patient. We've discovered in New Jersey, as many as 25 percent of patients don't come back to find out their results, so it's oftentimes a process that gets blunted on the way to a diagnosis."

The Western blot assay also presents technical challenges that most clinical chemists would be happy to forego, according to Mark Pandori, PhD, Chief Microbiologist for the San Francisco Department of Public Health Laboratory. "From a laboratorian's point-of-view, Western blot is somewhat problematic. It's slow and somewhat time-intensive to run, and many samples will have spurious bands, making it often difficult to interpret," he said.

Given these shortcomings, many, including Leone, have questioned the Western blot's status as a gold standard. "I think it's an impediment to making an accurate diagnosis during the critical six-week period of acute infection. As our screening tools have improved, we need more sensitive confirmatory testing too," he said.

Many in the HIV field apparently share Leone's assessment. In fact, the latest APHL/CDC proposed algorithm—the one it is taking through the validation process towards eventual adoption—omits Western blot altogether. Experts, however, are quick to point out that the assay still provides relevant clinical information. "Western blot is fine as long as you're confirming long-standing infection, because those people have developed a full antibody response and the Western blot will be positive," explained Werner. "It's also useful for diagnostic dilemmas and for testing vaccine recipients, because you can see the pattern of response in people who are not infected but have the antibody because they've been vaccinated." The assay also continues to have a role in monitoring patients with end-stage AIDS, according to Pandori.

Cutting Time, Indeterminate Results

The 2010 proposed algorithm calls for initial screening with a fourth-generation immunoassay (See Figure, previous page). Positive results would be followed by an HIV-1/HIV-2 differentiation immunoassay. Positive results from this step would prompt the start of HIV treatment, whereas a negative result would lead to an additional step of NAAT testing.

This strategy appears to meet all the priorities for an HIV diagnostic algorithm identified by the APHL-CDC HIV Steering Committee. These criteria include detecting HIV infection through a range from acute to long-standing illness, differentiating HIV-1 from HIV-2, providing timely results, and eliminating indeterminate and inconclusive results whenever possible. "The proposed algorithm is being called 'ideal' because it gets at all those characteristics," explained Werner. "There's a very small percentage of specimens that you'd have to go to RNA testing to get a result on. You could do a fourth-generation assay, then an HIV-1 HIV-2 differentiation assay and get results pretty quickly on the vast majority of people you were testing. You'd also know whether or not you were dealing with acute infection with this algorithm." ♦



Heart of a Woman

An Equal Opportunity Killer

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If you are like most women you probably don't think much about cardiovascular disease or heart attack and stroke. You may not know that the diseases of the heart and stroke are the No.1 and No.3 killers worldwide. Statistics for the African Continent (let alone Botswana) are not available. However in US it is estimated that over half a million women die of heart disease and stroke

(and other cardiovascular diseases) every year. In fact heart disease, stroke and other cardiovascular diseases will kill more women than the next five causes of death combined.

Are you at risk?

Following are questions that you need to ask yourself. If one or more of them apply to you, then you need to see your health care provider for a proper assessment of your risk.

1. Are you a woman over the age of 50?
2. Is there a family history of heart disease?
3. Do you currently already have a heart condition?
4. Have you had a stroke?
5. Is your blood pressure greater than 140/90mmHg
6. Are you a smoker (or live with people who smoke regularly)?
7. Is your blood cholesterol high?
8. Do you get less than 30 minutes of physical activity on most days?
9. Are you more than 10 kg overweight?
10. Are you a diabetic?

Risk factors that you cannot control

1. Your age
2. Your gender
3. Your family history and race
4. A previous stroke or heart attack

Did you know for example:

- One in three women have some form of heart disease and blood vessel disease
- Cardiovascular disease and stroke kill nearly twice as many women than all forms of cancers
- One in 30 women's deaths are from breast cancer
- One in 2.6 women's deaths are due to cardiovascular disease
- 61% of strokes are female and 39% are male
- The death rate for stroke is significantly higher for black women than for white women

(These statistics are derived from the Centre for Disease Control and the American Heart Association).

Chances are high that you or someone in your family will be affected at some point. Besides being deadly, these statistics can also be debilitating, robbing victims of their quality of life. Cardiovascular disease can strike women at any time of life, but the risk steadily rises with age. For example, the processes that leads to heart attack and stroke start when you are young and develop over time. As a woman grows older, her risk rises. The good news is that these diseases are largely preventable, by living a healthy lifestyle.

Women's risk profile

Several factors raise your risk of heart disease and stroke. The more risk factors you have, the higher

is your risk. Some you cannot do anything about but others you can control.

Factors that you can control or treat with lifestyle changes or with the help of your health care provider;

1. High blood pressure
2. Tobacco smoke
3. High cholesterol
4. Physical inactivity
5. Obesity
6. Diabetes
7. Excessive alcohol intake

Let's take a look at the factors that you cannot control:

1. Age:

The older you get, the more likely you are to develop heart disease. Heart disease rates in women after menopause are 2-3 times higher than those women with the same age before menopause. In fact, for people over the age of 55, the lifetime risk for stroke is greater than 1 in 6. Women have a higher risk than men, perhaps due to their survival advantage.

2. Gender:

Men have a greater risk of heart attack than women and they have heart attacks earlier in life. However, at older ages women who have heart attacks are more likely to die from them.

3. Hereditary and race:

If your brother, father or grandfather had a heart attack before the age of 55, or your sister, mother and grandmother had one before the age of 65, you may be at risk too. Black women are at a higher risk of heart disease and stroke. This is because black population has a higher risk of high blood pressure and diabetes. Most people with a strong family history of heart disease or strokes have at least one of these risk factors. Just as you cannot control your age, sex and race, you cannot control your family history. That is why it is even more important to treat and control any other risk factors you have.

4. Previous stroke or heart attack:

Stroke and heart attack survivors have a much higher risk of stroke than people who have not had one. To help prevent a second event, you must reduce your risk factors. ♦



Meningitis

Bacteria Mimic as Human Cells to Evade Immune System

Healthnewsrack.com



The way in which bacteria that cause bacterial meningitis mimic human cells to evade the body's innate immune system has been revealed by researchers at the University of Oxford and Imperial College London.

The study, published in *Nature*, could lead to the development of new vaccines that give better protection against meningitis B, the strain which

accounts for the vast majority of cases of the disease in the UK.

Meningitis involves an inflammation of the membranes covering the brain and the spinal cord as the result of an infection. The infection can be due to a virus or bacteria, but bacterial meningitis is much more serious with approximately 5% of cases resulting in death. The disease mainly affects infants and young children, but is also often found in teenagers and young adults. The disease is frightening because it can strike rapidly, with people becoming seriously ill within hours.

The bacterium *Neisseria meningitidis* is the most common cause of bacterial meningitis. It comes in different forms, causing different strains of the disease. With vaccines against strains A and C, group B now accounts for around 90% of cases in the UK. While there is still no vaccine available for strain B, two vaccine candidates are in clinical trials.

The Oxford and Imperial research team, funded by the Wellcome Trust and Medical Research Council, looked at how one protein in the outside coat of *Neisseria meningitidis* enables the bacteria to avoid being attacked and killed by the complement system, part of the body's innate immune system.

The complement system is designed to attack all foreign bodies that come into contact with the blood. We have particular sugar molecules on the surface of our own cells that flag them as being part of our body and stop them from being attacked and killed. This system

works through factor H, a molecule that circulates in the blood and binds to the sugars on the surface

of our cells, preventing any immune response.

Critically, the protein on the outside of *Neisseria* bacteria also binds factor H. Called factor H binding protein, it makes the bacteria appear like human cells and so prevents any attack from the innate immune system.

The researchers, led by Professor Susan M. Lea of the Sir William Dunn School of Pathology at the University of Oxford and Professor Christoph M. Tang of the Centre for Molecular Microbiology and Infection at Imperial College London, determined the structure of human factor H attached to factor H binding protein on the meningitis bacterium. They found that the protein in the bacterial coat mimicked the sugars on the surface of human cells precisely, enabling the bacteria to bind factor H in the same way as human cells. "It's like the bacteria have stolen someone's coat and put it on in an effort to look like them," says Professor Lea of Oxford University, who led the work. "This protein enables the meningococcal bacteria to pass themselves off as human cells, and the disguise is good enough to fool the immune system."

"Meningitis B can be a devastating disease and there is an urgent need to create an effective vaccine against it. We hope our new findings will help with this work. Our study gives us a clearer understanding of how meningococcal bacteria shield themselves from the immune system and it suggests that we could tailor new vaccines to fight this important human pathogen," added Professor Tang, from the Centre for Molecular Microbiology and Infection at Imperial College London. The two vaccines against meningitis B that are currently in clinical trials, which have been developed by different pharmaceutical companies, both use factor H binding protein as part of the vaccine formulation. The aim is to generate an immune response that will protect against any subsequent infection.

These results suggest that on injection, the bacterial protein used in the vaccine will immediately get bound up by factor H in the blood and may no longer be able to generate an optimal immune response. The researchers at Oxford and Imperial believe that the bacterial protein could be modified so that it did not bind factor H, making it likely that a much stronger immune response could be elicited to protect against the disease.

"We are looking to use the knowledge gained from this study to work with pharmaceutical companies in the design of improved, smarter vaccines that give better protection against meningitis B," says Professor Lea. ♦





Dyslexia

Robert Lang (B.Optom)
Eye Express

Irene Nel
Special Need Education

Frida Brabmbhatt-Deurcoorder
Occupational Therapist

Precious Machirya
Clinical Psychologist
Independence Avenue Suregery



Common challenges experienced by those with Dyslexia

- Reverses numbers and letters
- Difficulty with word recognition,
- Difficulty with reading fluency,
- Difficulty with spelling and complex language skills such as grammar, reading comprehension and writing.
- Possible difficulty with spoken language, having trouble with expressing themselves clearly and understanding exactly what others mean when they speak.
- Difficulty distinguishing left and right
- Poor organization
- Difficulties telling the time
- Find it really hard to write by hand
- Find it difficult to copy things accurately from the board to paper
- Difficulty remembering or understanding what they just read
- Difficulty remembering or understanding what they have just heard
- Are unable to repeat what they have just been told
- Have difficulty writing down what they think
- Difficulty understanding and following instructions
- Reduced self esteem and confidence. Disliking school due to failure at academic tasks.

arithmetic.

Dyslexia is not the result of lack of motivation, sensory impairment, inadequate instructional or environmental opportunities or other limiting conditions, but it may occur together with these conditions. Although dyslexia is a lifelong disorder, individuals with dyslexia frequently respond successfully to timely and appropriate intervention.

Theories of Dyslexia

1. **Cerebellar theory:** The cerebellum of dyslexic patients is mildly dysfunctional.
2. **Evolutionary Hypothesis:** The theory posits that reading is a unnatural act carried out by humans for an exceedingly brief period in our evolutionary history
3. **Magnocellular theory:** The magnocellular is not restricted to the visual pathways but to all pathways (visual/auditory/tactile)
4. **Naming speed deficit:** There is a deficit and the speed that the brain names the visual codes.
5. **Perceptual visual-noise exclusion theory:** The impaired filtering of behaviourally irrelevant visual information or noise
6. **Phonological deficit theory:** People with dyslexia have a specific impairment in the representation, storage and/or retrieval of speech sounds.
7. **Rapid auditory processing theory:** The primary deficit lies in the perception of short or rapidly varying sounds.
8. **Visual theory:** Visual impairment gives rise to difficulties with the processing of letters and words.

Facts we need to know

- The prevalence of Dyslexia is between 4-10 %and the severity can vary from mild to severe
- There are more male patients than female and therefore a strong genetic link
- Dyslexic students tend to be good at understanding three dimensional objects, spatial reasoning and things they can see in pictures
- They seem to be able to solve complex mathematical problems but struggle with "basic" mathematics
- Dyslexia is not a disease, and thus medication will not cure a person, it will help to focus the child but do nothing for the root cause.
- Dyslexia can only be treated with appropriate educational/occupational therapy/psychological/ optometric coping strategies.

Optometric view

Dyslexic patients present with specific visual challenges. Following are a few visual disorders that an optometrist will typically see in an Optometric evaluation of a Dyslexic child.

1. **Refractive errors:** Some evidence of increased prevalence of hypermetropia in the reading disabled.
2. **Accommodation:** High levels of reduced amplitudes of accommodation.
3. **Amplitude of convergence:** Reduced amplitude is frequently measured.
4. **Binocular vision:** Alternating strabismus is likely to be found.
5. **Ocular dominance:** Cross dominance often found but cross dominance is not mutually exclusive to Dyslexia.
6. **Eye movements:** Dyslexics show a higher prevalence of regressions of eye movements that is required for reading.

Dyslexia is not a curable condition so treatment is not the correct word, all eye care professionals focus on coping skills to help the Dyslexic child to cope with this disability by giving him/her the optimal visual system possible.

1. **Accommodative flexibility:** a series of near/far focus exercises.
2. **Convergence flexibility:** convergence and divergence exercises.
3. **Biofeedback skills:** to allow the child know where the child is focusing.
4. Visual recognition skills as well as eye-hand coordination skills
5. Treatment of any refractive anomalies.
6. Gross/fine ocular/motor skills this will include pursuits and saccadic skills and also eye teaming skills.

4. **Intuitive colorimeter:**

Scotopic sensitivity syndrome (SSS) refers to visual perceptual disorder affecting primary reading and writing based activities. There is a strong relationship between Dyslexia and SSS. SSS is based on the theory that some individuals have hypersensitive photoreceptors, visual pathways, and/or brain systems that react inappropriately to physical energy.

Helen Irlen (psychologist) and Olive Meares (teacher) found that certain filtered colours were able to greatly improve the reading skill/accuracy and speed of dyslexic and SSS patients.

Coloured filters change the contrast between the foreground and background between letters and words, this seems to reduce the confusion or disturbance and enabled the child to read and comprehend better. Reading also becomes more accurate and the reading speed improves.

Research has shown that 53% of tested Dyslexic patients had significant improvement in their reading speed and comprehension. There are also some SSS and dyslexic patients that show no improvement when presented different coloured filters, this cannot be explained and is a reason why this is not a mainstream treatment for dyslexia and SSS.



Special Need Educational View

In the past Dyslexia was known as 'word blindness', which from an Educational point of view is very misleading. A dyslexic person sees words, but in a different way. Although the apparatus of vision is functioning, the apparatus of interpretation breaks down in changing of objects into symbols and words.

Despite conventional instruction, adequate intelligence and socio-cultural opportunity, Dyslexic students (estimated to be around 10 to 15 % of a school's population) have difficulty in learning to read. The disability may also present itself in problems with writing (dysgraphia); problems with spelling (dysortographia) and problems with arithmetic (dyscalculia).

A student with Dyslexia will have encountered difficulties at the onset of primary education, and may have a high level of anxiety towards learning. This may lead on to a multitude of learning barriers in their development as a whole child.

There are different strategies and guidelines in management of children with dyslexia. Providing that children are individuals, and what works for one may not work for the other. The severity and range of the problem will vary from child to child. All possible solutions should be tried, many times, an ophthalmic solution, such as colour therapy makes for drastic improvement. Multi sensory teaching strategies are also one of the most successful interventions for Dyslexia.

There are many age appropriate strategies that could be used for each individual, but most important is that an individual is properly assessed and professionally diagnosed in a multi disciplinary team (including Optometrist; Educationalist; Teacher; Parent; Occupational Therapist and Speech Therapist if necessary). The team needs to work together in devising an IEP (Individual Education Plan) in helping the individual consistently.

As we take responsibility as educators to develop a child to his/her full potential we owe it to each individual to identify dyslexia and intervene as early as possible. If we neglect it, we make many other problems more difficult to solve.

Occupational Therapy View

A child can be professionally diagnosed with dyslexia as early as 5 1/2 years old. Many people are reluctant to test children before the third grade. Parents are often told that their children will "outgrow" reading difficulties or that the difficulties are a lack of motivation. It is important to diagnose children as young as possible because it takes less time to remediate the reading problem at age 6 than at age 10, and it is more difficult the older the child gets without treatment.

Start as early as possible with management strategies that support the child with Dyslexia. Children will not outgrow dyslexia. The longer you wait to get help for a child with reading difficulties, the harder and more time it takes to get them caught up. It can take as long as four to five times as long to improve the same skills that it would take if you started in kindergarten or first grade.

- Allow extra time to complete work (to take into account the extra time it takes to read and interpret the information)
- More repeated exposure to the same task than typical
- Use of visual cues rather than long verbal instructions
- Visual prompts wherever possible (i.e. pictures not word lists for organization)
- Continued practice of mastered (familiar) skills, rather than simply moving on new tasks without maintaining the old.

Occupational therapy approaches and activities for a dyslexic child:

- The most effective teaching method for all children is a multi-sensory approach, to allow students to gather information in multiple ways. Teachers use auditory, visual, tactile and kinesthetic information to stimulate the brain during teaching. This means to incorporate the senses of hearing, seeing, touching, movement, smell and taste during the learning process.

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Dyslexia

continued from page 13

- Often children with dyslexia have an impairment in the visual or auditory systems. This makes it more important to use touch and movement as components of teaching. For young children this could mean writing letters in sand or finger paint, saying sounds as you write them in the air or on a chalkboard. By saying sounds as you write them, you are combining two senses. Writing letters in sand or finger paint with gives sensory input that is different than writing with a pencil using paper.
- Colour coding is another tool that can be used with dyslexic students. Teachers can highlight important or new information or write it in another colour to call attention to that information.
- It is important to assist students with organizing thoughts. Using graphic organizers is a tool to express ideas and thoughts in a visual format. This concept can be used during brainstorming ideas, presenting ideas or as a guide during the writing process. With graphic organizers, students are focused on the ideas and connections between ideas—not on spelling, grammar or punctuation. Once the ideas are in place, students can then move to the writing process in which their ideas can be transformed into a written document.

Clinical Psychologist View

From reading the aforementioned information it becomes clear to see that early diagnoses and “treatment” of Dyslexia is key. Clinical and Educational Psychologists are trained to test for and identify specific Learning Disorders such as Dyslexia. And in an ideal situation, with the diagnosis being made at an early age, a team of professionals and the parents then support the interventions noted within an Individualized Education Plan (IEP). It is important to remember that there is no cure for Dyslexia and that treatment largely involves a focus on coping skills in order to reduce the disability.

Unfortunately, Dyslexia, as with other Learning Disorders can lead to a myriad of problems that affect the individual from childhood through to adulthood from a social and psychological perspective. Difficulties are often experienced with self-confidence, peer relationships, and occupational matters. These difficulties may present themselves through low self-esteem, a lack of motivation, an inability to relate to others in a social context, performance related anxiety, and an avoidance of places or things that bring out these feelings. The compounded effect of social and psychological problems with Dyslexia can be rather daunting and can lead to an increased dropout rate from school and an increased absenteeism from the workplace. These problems typically have root causes linked to childhood experiences and have developed over time in a maladaptive manner.

It is frequently the accompanying symptoms of Dyslexia that are treated by a Psychologist. There is often an unnecessary shame and guilt that clouds the life of someone with a Learning Disorder. It is unnecessary as such disabilities should not define the individual and should not limit them in other aspects of development.

Freaky Dreams:

What Do They Mean?

Suzanne Wright
Reviewed by Laura J. Martin, MD

Whether it's falling off a cliff or public nudity, find out what may be causing those vivid, crazy dreams.



Human beings dream, and so do, scientists believe, most mammals and some birds. On the most basic level, a dream is the experience you have of envisioned images, sounds, or other sensations while you sleep. They are an internal mental process. But dreams are actually much more than that.

Sigmund Freud's theory was that your dreams are an expression of what you're repressing during the time you are awake. And Carl Jung believed that dreams provide messages about “lost” or “neglected” parts of our selves that need to be reintegrated. Many dreams simply come from a preoccupation with the day's activities. But some offer rich, symbolic expressions — an interface between the conscious and the unconscious that can fill in the gaps of our self-knowledge and provide information and insight.

Why Do We Dream?

Everyone dreams every night — even if we don't remember our dreams.

Tom Scammell, MD, associate professor of neurology at Harvard Medical School and Beth Israel Deaconess Medical Center, says no one knows why we dream. “There is a strong movement in the research community to research how sleep improves memory and learning,” Scammell says. “One speculative possibility is that dreaming allows you the opportunity to practice things you may or may not ever have to do, like running away or fighting off a predator.”

Three or four times a night, you have a period of sleep that lasts approximately 90 minutes called REM — rapid eye movement — sleep. It is during REM sleep that your brain is more active. And according to Scammell, it's then that conditions are right for “story-like” dreams that are rich in action, complexity, and emotion.

“You are most likely to recall dreams if you wake at the end of a REM episode,” says Scammell. “Americans, who are chronically sleep-deprived, probably miss out on some REM sleep. This builds up pressure for REM sleep. So when you're catching up on your sleep, you may have more REM sleep with more intense dreams.”

The Value of Dreams

Scientists have long debated whether dreams have meaning. But those who work with their dreams, either independently or with the aid of dream interpreters, believe that understanding dreams can provide meaningful clues to feelings, thoughts, behaviours, motives, and values.

Artists, entrepreneurs, inventors, and scientists often get creative ideas from dreams. Kelly Sullivan Walden is a certified clinical hypnotherapist and dream coach. In her book *I Had the Strangest Dream...: The Dreamer's Dictionary for the 21st Century*, she divides dreams into eight categories:

- Processing
- Venting (nightmares)
- Integration
- Breakdown/breakthrough
- Recurring
- Precognitive
- Prophetic
- Wish fulfillment

The most common, she says, are recurring and venting dreams.

Worrying About Weird Dreams

What are we to make of the crazy dreams of adults? All of us can recall strange dreams. But interpreting and understanding them can be tricky.

Some of the most common dreams include teeth falling out (indicating a possible fear of aging or death), falling (loss of confidence or threat to security), or public nudity (feelings of vulnerability or exposure of weakness). These are examples of archetypal dreams that exist across time, culture, and people.

But most dreams are intensely personal. They reflect the underlying thoughts and feelings of the dreamer. Symbols — images or objects with obvious meaning in daily life — serve as metaphors, representing something partially known. A lion in a dream, for example, can mean something different to a circus performer than to a teen who claims it as her favourite stuffed animal. By examining each dream element and looking for parallels between associations, you can decipher a dream's meaning.

Recurring dreams can continue for days, weeks, months, and even years.

Diedre Barrets of International Association of the Study of Dreams and author of Committee of Sleep Barrett says the majority of people over a lifetime have recurring dreams. "They are more important, on average, than other dreams. They are probably your unconscious trying to tell you something, a more significant issue."

She says there are two key clusters of recurring dreams. Most of them are nightmares, though some are positive or neutral in nature.

"The single likeliest [dreams] to get locked in are posttraumatic dreams, where you are reliving something that happened while you were awake," she says. Soldiers or victims of violence may experience such recurring dreams. "The details unfold like they do in real life but often go one step further. The thing you are most afraid of in real life presents in the dream."

The other type of recurring dream is one where you haven't experienced the trauma in your waking life. "These dreams include monsters and surreal, impossible settings," she says. "They are much more metaphorical. Sometimes symbolism is obvious, sometimes it's quite a puzzle."

Should we be concerned about recurring themes? Barrett says only if the content is troubling. In the case of disturbing posttraumatic stress dreams, she recommends seeking help from a therapist. "They will diminish over time."

Improving Dream Memory

Dreams are by their nature, uncontrollable. But there are things you can do to increase your dream retention:

- Get enough sleep. Those who sleep for longer periods of time enjoy more REM sleep, resulting in more dreams and possibly greater memory of them.
- Employ the power of suggestion. Experts recommend that before you go to sleep, remind yourself that you want to remember your dreams.
- Keep a journal. Have a pen and paper or a recorder at your bedside so you can log your dreams when you awaken before hopping out of bed. If not immediately recorded, dreams become elusive and difficult to retrieve.
- Get curious. When you first wake up, lie still, stay quiet, and see if you can recall a dream. It may flood over you. Mull it over. Having an open mind, reading about dreams, and discussing them actively with friends and family may encourage future dreaming.
- Limit drug and alcohol intake. Sleep and, by extension, dreams are affected by alcohol. And medications, including antidepressants, can induce crazy dreams or even nightmares. Talk to your doctor about the effects of drugs on your dreams. ♦

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CROSSWORD



Scramblers

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

Theme: Chemistry

ECNIROAT



NOSTOULI



NELTEEM



LEMECUOL



RIPCEODI



SAMS



Last Issue solutions

CROSSWORD

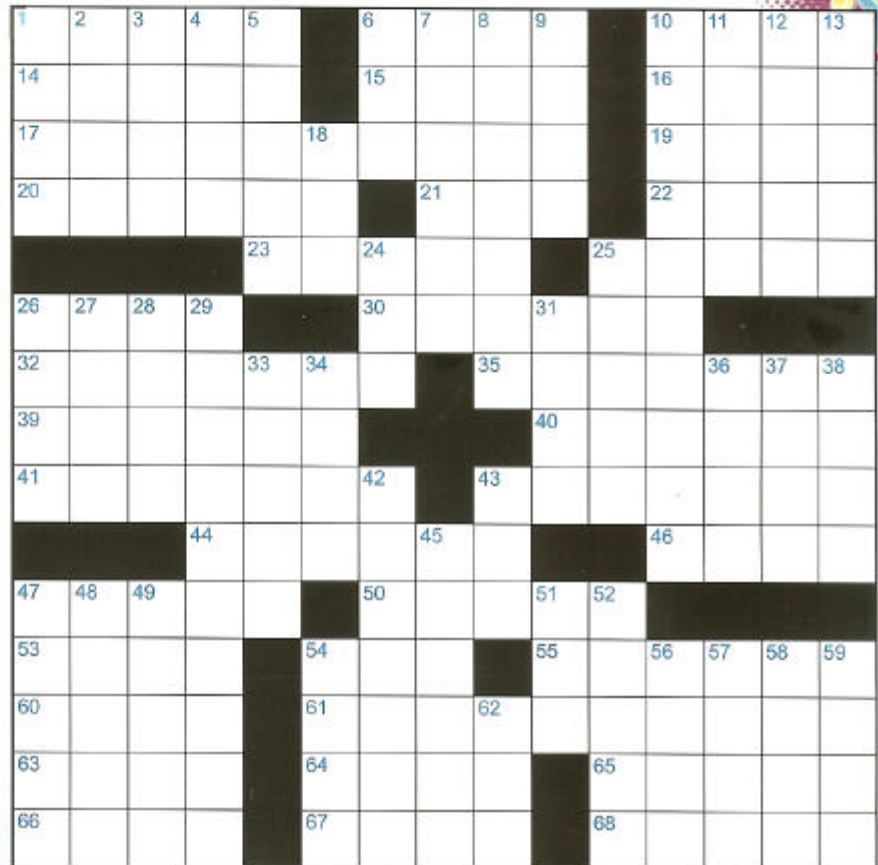


Scramblers

CNFNTUIO = FUNCTION
GEERATRLN = RECTANGLE
RUOTDPC = PRODUCT
DEGEESR = DEGREES
PIVSETIO = POSITIVE
REPBLOM = PROBLEM

Mystery Words:

UNRAREEBLM = REAL NUMBER



Across:

- Sudden burst or increase (dated)
- Parentheses, e.g.
- Get to the bottom of something
- Jewish scripture
- Membranous layer of tissue (pl)
- Allergic reaction
- Gene control unassociated with DNA (genetics)
- CD/DVD writing software
- Unit of former Spanish currency
- _____ and outs
- Sand or stone grain
- Maturing process
- Coin toss (pl)
- Capital of Norway
- Mother _____
- Male roe deer
- Opening
- Character in *A Streetcar Named Desire*
- Omits element of word or phrase
- Small bone in ear
- Fast ride on horse (pl)
- part of head
- "... or _____"
- Purchase _____
- rhythm unit in poetry (pl)
- Come down hard
- "Harper Valley _____"
- "My!"
- Roman garb
- Worship of saints
- Give off, as light
- Acted like / imitated
- A Muppet from *Sesame Street*
- Fraction of a newton
- "Comin' _____ the Rye"
- Ringing of bells (pl)

Down

- Dance move
- Bishop of Rome
- Part of eye
- Extreme anger
- Letter of Greek alphabet
- "_____ Maria"
- Focal point
- Hold onto something (2 words)
- Small pouch (pl)
- One behind another
- Womb (pl)
- Temporary paper currency
- Immunizations
- Old horse
- Liquid containing pigment/dyes
- Band on a dress with many folds
- About (2 words)
- Drunkards
- Wine sediment at the bottom of the barrel
- Destroy utterly
- Constituent of urine
- Gastric woe
- Peace and quiet
- "American _____"
- Edible mushroom (pl)
- Former municipality of Finland
- Inscription on a tombstone
- Precious stone
- Castle _____
- _____ out (declined)
- Spacious
- Take up defensive positions (2 words)
- "You stink!"
- Lug
- Excellent, in modern slang
- Challenge somebody
- Mountain on the east coast of Sicily
- Seed covering in some plants
- Bakery selections
- Altar avowal

Diagnofirm in pictures...



Innocent Mupunga receiving a present from Mr. Bozongwana. He was honoured as the most promising employee



Samantha Stoneham receiving a present from Mr. Bozongwana as an honour for long service



Kefentse Mmereki, Diagnofirm's longest serving employee, receiving her present from the Laboratories Manager Mr. Bozongwana, in honour of her long service



Beatrice Mudende receiving a present from Mr. Bozongwana as an honour for long service