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MedBulletin

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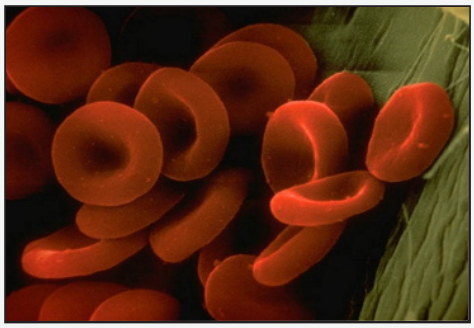
MedBulletin

Bad Banked Blood?

MedBulletin by Simone Liang



One blood donation can save three lives, but are the transfusions as effective as they could be? Blood vessels constrict and dilate, but it is the nitric oxide in the blood that opens the vessels, allowing oxygen to be delivered to the tissues. Regardless of the amount of oxygen available, the blood cells are not able to deliver oxygen to the tissues without the proper levels of nitric oxide. This could be the reason why people who undergo transfusions experienced higher incidents of strokes and heart attacks.

Recently, two separate research teams conducted independent studies concerning the levels of nitric oxide in the blood donations of clinics. One research team studied the nitric oxide levels in the blood, while the other investigated the effects of nitric levels. The blood donations are allowed to be kept for 42 days, but researchers saw "clear indications of nitric oxide depletion within the first three hours" said Dr. McMahon, leader of the second research team. In fact, the levels of nitric oxide continued to drop daily, and the gas itself dissipated once the blood had left the body.

However, once the nitric oxide levels were restored, the blood cells were able to continue delivering oxygen to the tissues. There have only been initial studies conducted in the laboratory and on dogs, but there is intention to continue the studies with clinical trials, and to possibly find a way to maintain the levels of nitric oxide in blood donations.

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Could Psychological Disorders Impede Informed Consent?

MedBulletin by Fanyu Yang

The nature of Borderline Personality Disorder (BPD), characterized by intentional self-mutilation, raises growing debate over adequate consent for clinical research purposes. Patients with BPD display damaging and treatment resistant impulsivity, unstable self-image as well as overall inability to tolerate loneliness and intimacy. Despite fleeting episodes of severe psychotic stress, patients generally have normal cognitive function and can adequately assess the risks of their participation in any study. However, the issue of a BPD patient's true informed consent is still necessary.

Patients with BPD may have poor rational decision-making abilities, which in turn, predispose them to place psychological needs before logical considerations. For example, a subject who consents to participation motivated by the devaluing tendencies of their interpersonal relationships or idealize feeling special, hurt and even suicidal. When BPD patients participate in a study with underlying psychological reasons, consent may not be valid because subjects are often motivated by factors other than self-interest.

On flip side, exclusively omitting patients with psychology disorders in studies is discriminatory on both ethical and statistical grounds. It could also detrimentally defy the purpose of research itself, especially in a chronic and debilitating condition such as BPD. Furthermore, it does not address the argument that BPD patients also do act in their self-interest, although the reasons may be slightly strange to others without the condition. Extreme caution should therefore be exercised in assessing both the subjects' individual motives and their ability to consent based on comprehension of a study.

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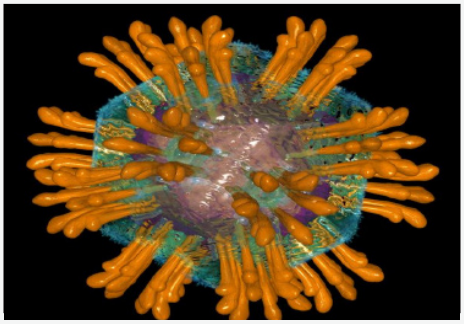
The Immune System... Powerless Against Hepatitis C?

MedBulletin by Veronica Chan



Researchers from the University of Birmingham recently confirmed the mechanism by which the Hepatitis C virus bypasses the body's immune system, consequently inducing a rapid spread of the disease. Viruses typically attack by replicating themselves in large quantities within host cells, followed by their release to repeat this process in other cells. A study conducted using infected liver tumour cells demonstrated that Hepatitis C has the unique ability to undergo "cell-to-cell transmission." In essence, this type of virus does not have to be released from the initial host cell before infecting another. It therefore evades the defense mechanisms of antibodies, which occur only outside of host cells. These latest findings consequently conflicts with many previous treatment methods to increase antibody activity, in attempt to reduce the disease's potentially fatal effects.

Dr. Jennifer Timpe, one of study's authors, noted that this distinctive transmission method accounts for the chronic and persistent nature of the illness. Currently, most Hepatitis C patients must resort to liver transplantation in the long run, as liver cancer and chronic liver failure are common consequences of such a viral infection. It is hoped that these ground-breaking results will provide new insight into the development of a plausible and much-needed treatment for Hepatitis C.

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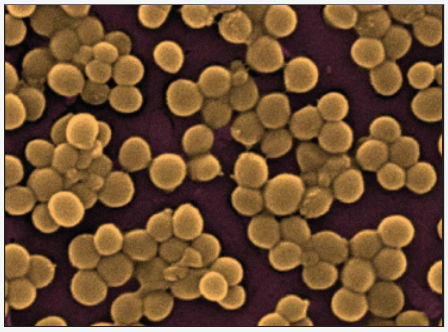
Worth Screening For?

MedBulletin by Simone Liang



In one year, nearly 1.7 million Americans contract various infections during their stay at the hospital. The "super bug", methicillan-resistant Staphylococcus aureus (MRSA) is responsible for 10 percent of the 1.7 million ailments, and kills nearly 19,000 people a year. Found in hospitals, MRSA is transferred from physician to patient, when doctors fail to wash up properly after treating infected patients. MRSA can also be found on the skin of healthy individuals. Recently, MRSA has been on the rise, spreading into schools and public areas, and estimated to infect more than 90,000 people a year.

Despite the serious situation, many doctors and infection control experts oppose the idea of screening for MRSA, which can limit the transfer of the bacteria and possibly eliminate MRSA altogether. Physicians argue that the costs of screening are too high, and that in some hospitals, it is unnecessary since the prevalence of MRSA cases is extremely low. At Chicago's University Medical Centre, it will cost $80 000 for the testing supplies alone, and $28 million to install testing equipment in 155 hospitals in Pittsburgh, PA. Rather than trying to eliminate one strain of bacteria, experts argue that the efforts should be focused on controlling infection through proper sanitization.

In Illinois, Pennsylvania, and New Jersey, hospitals are now required to screen likely victims of MRSA. In one case, the infection rate of MRSA dropped 60 percent in three Chicago hospitals after screening began in 2005. Is the containment of a single strain of bacteria worth millions of dollars?

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Cervical Cancer associated with Birth Control

MedBulletin by Simone Liang

Cervical cancer tends to appear when women are in their 30's, which is also when many women are potentially on the pill. A longitudinal study conducted at the University of Oxford found a slightly increased risk of cervical cancer in women who were regularly taking oral contraceptives. Nevertheless, the increased risk of cervical cancer returned to the norm after ten years, when the women stopped taking the pill.

Led by Dr. Green, 24 international studies found that, compared to women who have never taken oral contraceptives, the risk of cervical cancer was doubled in women who had been on the pill for a minimum of five years. In developing countries, the risk of cervical cancer in women who had taken the pill, rose from 7.3 in 1000 to 8.3 in 1000 after five years. Within developed countries, women who had never taken the pill had a 3.8 in 1000 chances of developing cervical cancer. Women who were on the pill for at least five years had a 4 in 1000 chance of cervical cancer, and after ten years, the risk increased to 4.5 in 1000.

Researchers are not sure why oral contraceptives increase the risk of cancer, but some suggest that it is due to an imbalance of hormones levels caused by the pill. However, the boost in hormones also protects against ovarian, womb, and other cancers that are currently undetectable. Experts are confident that the increased risk of cervical cancer is minor, and that with routine screening, there should be little reason to worry.

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A Merciful Hand? - A Doctor's Decision to Deny Resuscitation

MedBulletin by Randall Lau

In the absence of a "Do Not Resuscitate" (DNR) order, doctors are legally bound to attempt resuscitation even in the terminally ill. The process of resuscitation is invasive and undignified, often capable of prolonging suffering and the onset of death. In some instances, the physician attempts only a token resuscitation, termed a "slow code". It constitutes resuscitating terminally ill patients too slowly to constitute a reasonable attempt at saving the life.

In the case of the terminally ill, dignity and unnecessary suffering become the physicians' primary concerns, and the code is used if the patient is in such a compromised mental state that the decision cannot be reasonably accepted, and the judgment of the families is deemed unrealistically hopeful.

Ten years ago, the existence of the slow code was revealed to the public, though hospitals continue its use amidst the ignorance of patients. The code's use has not been addressed by the profession or any level of legislature, and its use is often inspired by a fear of legal action. But as the public asserts, the practice is deceptive.

Physicians, however, are raised in a culture which is in constant denial that death is a necessary end of natural life; and they are trained never to extinguish hope where a last protocol remains. Aside from religious convictions, society often refuses to accept medical realism. In response, physicians feel that the definitions of hope for the terminally ill require reevaluation to adopt an increasingly deterministic view of life.

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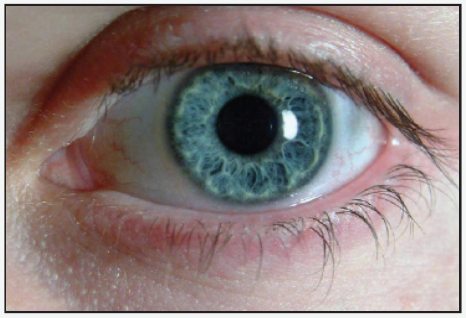
Twinkle Twinkle, Little Spot

MedBulletin by Fanyu Yang



Recent research from the Schepens Eye Research Institute offers a bright prospect for the early detection of retinal degeneration. The induced twinkle after-effect (TAE) is an inexpensive and effective technique that can accurately identify the location and breadth of specific blind spots caused by loss of photoreceptors in the eye.

While detecting blind spots may appear to be no extraordinary feat, it is often difficult due to the brain's automatic compensation for any missing information in its visual receptive field. This adapted "fill in" process also takes place in individuals with normal vision at a specific location in the intersection between the optic nerve and retina. Thus many people fail to seek medical attention because they perceive no early symptoms until the detrimental onset of diseases such as diabetic retinopathy and glaucoma.

TAE is a visual illusion in the blind spot when individuals look into a blank space after staring at a noisy visual target such as a detuned television screen. The areas can then be easily mapped using a blank touch screen for patients to outline the twinkling areas with their finger. In comparison to the traditional retinal specific microperimetry, the induced twinkle after-effect technique is simple and self-directed tool that allows patients to detect their own vision changes on a daily basis. Researchers are optimistic for its eventual mass-distribution as an online public health entity.

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Contraceptives for Children?

MedBulletin by Veronica Chan

Following a period of heated controversy, the King Middle School in Portland, Maine, is now one of the first schools in the United States to offer contraceptives for its students, from 11 to 13 years of age. This decision was largely in response to reports of worrisome statistics; five students admitted to being sexually active, and seventeen pregnancies were reported among the three Portland middle schools within the last four years.

The lack of parental consent required for the prescription of birth control pills, due to patient privacy laws, is particularly appalling to critics of this new policy. Moreover, this new endeavour may indirectly promote sexual activity in young adolescents. The potential increase in the spread of sexually transmitted infections as well as this legislation's conflict with many religious beliefs are causing widespread concern among members of the school community.

Despite these arguments, the school's nurse coordinator Amanda Rowe insists that it is important to protect students who are already sexually active by making birth control options readily available. Furthermore, she asserts that students requesting contraceptives are required to undergo extensive counseling about the negative implications of such choices.

Unquestionably, both parties are striving to advocate for what is believed to be in the best interest of these students. The appropriateness of contraceptive availability to young adolescents will continue to be debated as there are no definite answers. Does it potentially protect them or challenge moral values by encouraging early sexual activity? Whichever perspective one holds, careful observations of this initiative's outcomes will shed light onto the controversies raised by this question.

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