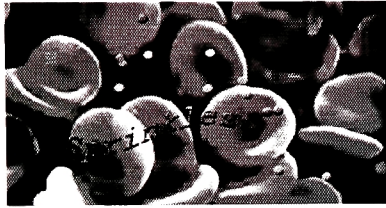


Sprinkles: A New Way of Managing Anemia

Jonathan Liu



Graphic by Katherine Saccucci

In 2001, researchers at Toronto's Hospital for Sick Children received a large grant from the H.J. Heinz Company for developing a new treatment for children suffering from anemia – particularly in developing countries. The World Health Organization currently estimates that around 50% of children in Africa and Asia suffer from iron deficiency.

Iron plays an integral role in oxygen delivery for our body. Red blood cells consist of many protein and iron compounds – called hemoglobin – which have a high affinity for oxygen molecules. A low iron level, also known as anemia, often leads

to fatigue, impaired development (with respect to motor skills and intelligence) and increases the chance of maternal morbidity even from a small loss in blood volume.

In the past, anemia has been treated using droplets of a solution containing high concentrations of iron. This method was typically avoided – especially for children – because it caused teeth stains and abdominal discomfort.

“Sprinkles”, a new form of vitamin C and iron supplementation, was developed by Sick Kids Hospital and is now being studied for its efficacy in developing countries such as Ghana, Sri Lanka and Nicaragua. Each sprinkle is composed of ferrous fumarate (an iron compound) encapsulated by a lipid-derived coat which allows everything to be dissolved and absorbed only at low pH levels in the stomach. “Sprinkles” comes in small packets which readily

mix with liquid-based foods without causing the undesirable “metallic taste”. The average price per packet is around \$0.025USD (a 60-day treatment would be \$1.50 USD), thus, the researchers managed to fulfill their goal in developing a cost-effective way of treating anemia.

Current follow-up studies on the effects of “Sprinkles” have shown positive results – it even works in conjunction with other nutritional supplements. With its high efficacy, low cost, ease of use, and neutral taste, “Sprinkles” is the ideal supplement for managing anemia in developing countries.

[SuppleFer. (n.d.). Micronutrient Sprinkles Program: Background. Retrieved January 27, 2005 from <http://www.supplefer.com/background.html>]

Stimulating Developments in Chronic Pain Treatments

Brent Mollon



Graphic by Katherine Saccucci

Patients suffering from chronic pain may be looking forward to the launch of a new high powered investigational neurostimulation system being developed by Medtronic, Inc. (MDT). Systems like this can be used to artificially stimulate neurons, which provides relief for those suffering from chronic pain.

This new system boasts a battery that patients can re-charge themselves. Moreover, the system comes with multiple program options, which is an improvement over previous systems which require physicians to manually program the devices. It is hoped that systems like this will allow patients to take a greater role in the management of their chronic pain – decreasing the strain chronic pain puts on the health care system.

The current development of these medical systems may be good news to the approximated 25% of US citizens who suffer from chronic pain (which is defined as pain that persists/recurs for more than 6 months).

While chronic pain may result from any number of disease or injuries, the detrimental impact it has on a person's life can be consistently seen. In order to best help these patients continue to live a normal, productive life, more research in the biomedical and psychological aspects of chronic pain should be conducted to allow for future breakthroughs in treatment.

[Original summary by Biotech Week, Meducator Summary by Brent Mollon]

Looking Deep for Answers...

Jonathan Liu



Graphic by Katherine Saccucci

Major depression has remained the leading psychiatric disability among adults under 50 in North America. To make matters worse, 20% of these patients are often resistant to drugs and psychotherapy – the most common methods of management. Although the cause of depression is not fully understood, researchers hypothesize that it involves an interaction between genetic predisposition and environmental situations.

Over the past few years, converging evidence (neuroimaging, biochemical, post mortem studies) have successfully linked the most

common form of depression with an overactive area in the brain responsible for mediating negative moods – the subgenual cingulate (cg25). The cg25 region is also connected to the hypothalamus, which accounts for the circadian rhythm irregularities in patients with depression.

A recent collaborative study conducted by experts from the Toronto Western Hospital, University of Toronto, and Centre for Mental Health and Addiction has reported successful management of depressed patients by using high frequency deep brain stimulation (DBS). Deep brain stimulation involves the implantation of a pacemaker in the affected area. Through time, the constant stimulation somehow alters neural networks in a positive manner. In the past DBS has been used successfully in treating patients with Parkinson's disease, epilepsy, and tremors. The recent study involved

six patients that were all resistant to the conventional methods of managing depression. The pacemaker devices were left in patients for a six month period and a PET follow up was conducted afterwards to check improvements in brain activity. Of the six patients, four reported significant improvements such as increased interest, better visual focus, and a general sense of calmness. Researchers hope to see DBS prescribed to patients that are treatment resistant. The final hurdle now involves finding the different affected brain regions as a result of various forms of depression.

[Mayberb, H.a., Lozano, A.M., Voon, V., McNeely, H.E., Seminowicz, D., Hamani, C., Schwab, J.M., & S.H. Kennedy. 2005. Deep Brain Stimulation for Treatment-Resistant Depression. *Neuron* 45: 651-660.]

Driving with Cardiac Diseases: Should Physicians Have to Report?

Brent Mollon



Graphic by Katherine Saccucci

Legislation in many Canadian regions requires that physicians report the names of any patients with medical conditions that place them at increased risk while driving. The idea behind this policy is that the Ministry of Transport can identify high risk drivers and remove their licenses if it is unsafe for them to drive. To aid physicians, the Ca-

nadian Cardiovascular Society has published a set of guidelines to identify and report patients with cardiac disease. However, researchers from Queens University have noted that there are unaddressed issues in the mandatory reporting of patients. In an article published in the *Canadian Journal of Cardiology*, Simpson et al. (2004) note that the current legislation appear to neglect the harms done to patients restricted from driving. As well, they have called the efficacy of mandatory reporting into question. Lastly, and perhaps most importantly, they questioned: "How can the scientific/technical assessment of risk be reconciled with

the social/ethical view of risk assessment?"

While it is understood that individuals should be restricted from operating a motor vehicle if they are not well enough to do so, the assessment of health is not always clear-cut. Even in the instances where a doctor is completely justified in reporting their patient, it is feared that legislation like this will degrade the trust between physician and patient – leading to reduced voluntary patient reporting.

[Original Article: Simpson, C.S., Hoffmaster, B., Mitchell, L.B. & Klein, G.J. (2004). Mandatory physician reporting of drivers with cardiac disease: Ethical and practical considerations. *Canadian Journal of Cardiology*, 20, 1329-1334.]