Life-saving medical advances: help for a healthier 2004

It is vital to remain current on practices and procedures that are important to one's health. Medical advances are being reported many times on a daily basis. These new diagnostic and treatment advances could be critical in health care, and in saving lives. This article will comment on some of these innovations.

Perhaps, the most exciting advance is the newly developed blood test for detection of the often deadly ovarian cancer, called *Ova Check*. A blood test is analysed for the presence of an unique, minute set of proteins that have been found in the blood of women known to have ovarian cancer. This type of testing is called proteomic pattern testing (1). In studies, the test was found to 'predict' ovarian cancer, even early stage I cancer, 94% of the time. CA125, the blood test for ovarian cancer that has been available until now, predicted ovarian cancer less than 10% of the time.

The Ova Check blood test is undergoing further study on larger groups of women. It will be made available by Quest Diagnostic Laboratories and Laboratory Corp. for testing of high-risk women (women with a strong family history of breast and/or ovarian cancer, certain colon cancers or women who have a known breast cancer (BRCA) gene mutation). According to Dr Reichman, the cost of this test will be in the $100–$200 range, and will not be covered by insurance until studies on a larger scale have been published and reviewed.

Cervical cancer is easily detected with a Pap test, but may not always produce definitive results. When faced with a questionable Pap test, one may want to consider a test for the human papilloma virus (HPV). According to a study published in the February 6, 2003 issue of The New England Journal of Medicine, of the 80 types of identified HPV, only about 30 are linked to malignancies. The study also suggests that an effective vaccine against the five most common HPV types could prevent about 90% of the cases of cervical cancer world wide. Vaccines catering to specific geographical regions would have to take into account differences in the distribution of HPV (2–5).

Premature birth is a topic that was designated by the March of Dimes as a top priority. Preterm delivery is defined as before the 37th week of pregnancy. It is a leading cause of infant mortality, and is preventable in some cases. Poor nutrition, infections (including periodontal), stress and tobacco use are a few of the culprits that cause this to happen (6, 7). A finding in the December 2002 issue of the American Journal of Obstetrics and Gynecology is that weekly injections of a hormone, 17-alpha-hydroxy progesterone caproate (17P), between the 16th and 20th weeks of pregnancy can reduce the risk of premature birth (8, 9).

Similarly, a simple vaginal smear between the 35th and 37th week of pregnancy could detect group B streptococcus (GBS). This is an infection transmitted from mother to foetus, with high levels of morbidity and mortality. If left untreated in a woman about to give birth, GBS can cause blood infection or sepsis in new-borns, as well as infection of the lining and fluid around the brain, or meningitis, according to the US Centers for Disease Control and Prevention (CDC; 10, 11).

Hypertension, a risk for cardiovascular and heart disease, affects many individuals. Recent studies have shown that a diuretic, such as hydrochlorothiazide, is the best treatment for this condition. It is less expensive than many newer drugs. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure states that for uncomplicated hypertension, thiazide diuretic should be used in drug treatment for most cases, either alone or combined with drugs from other classes. The report delineates specific high-risk conditions that are compelling indications for the use of other antihypertensive drug classes, such as angiotensin-converting enzyme inhibitors, angiotensin-receptor blockers, beta-blockers and calcium channel blockers (12).

Inflammation may be even more important as a risk factor for heart disease and stroke than well-established risk factors, such as high blood pressure or cholesterol levels. Blood levels of two inflammation-related molecules, interleukin-6 (IL-6) and tumour necrosis factor-alpha (TNF-α), were sometimes better predictors of future problems than the conventional risk factors (13). Inflammation is the body's response to an injury or infection, such as periodontal infection. Studies in the past few years have shown that inflammation has a role in atherosclerosis, the build-up of fatty deposits in blood vessels that can lead to heart attacks, strokes and other cardiovascular problems. The American Association and the Centers for Disease Control and Prevention recently published a joint scientific statement about using inflammatory markers in clinical and public health practice. This statement was developed after systematically reviewing the evidence of association between inflammatory markers (mainly

C reactive protein (CRP)), and coronary heart disease and stroke (14).

What is the normal range of hs-CRP level?

- If hs-CRP level is lower than 1.0 mg L^{-1}, a person has a low risk of developing cardiovascular disease.
- If hs-CRP is between 1.0 and 3.0 mg L^{-1}, a person has an average risk.
- If hs-CRP is higher than 3.0 mg L^{-1}, a person is at high risk (15).

If, after repeated testing, patients have persistently unexplained, markedly elevated hs-CRP (greater than 10.0 mg L^{-1}), other evaluation should be considered to exclude non-cardiovascular causes (15).

Based on the available evidence, the Writing Group recommends against screening of the entire adult population for hs-CRP as a public health measure. They conclude that it is reasonable to measure hs-CRP as an adjunct to the major risk factors to further assess absolute risk for coronary disease primary prevention. At the discretion of the physician, the measurement is considered optional, based on the moderate level of evidence (15).

Alzheimer's disease (AD) is a progressive, neurodegenerative disease, characterised in the brain by abnormal clumps (amyloid plaques) and tangled bundles of fibres (neurofibrillary tangles) composed of misplaced proteins. There is no effective treatment to cure or reduce the progression of the disease, but there has been research on how to prevent the disease. Scientists are testing various types of drugs and other substances to determine if they can stop AD progression, including anti-inflammatory drugs, such as aspirin, non-steroidal anti-inflammatory drugs (NSAIDs), statins, folic acid, gingko biloba and vitamins E, B6 and B12. Vaccines and low-fat diets are also being examined (16).

Alcoholism is a disease characterised by physical dependence on alcohol that plagues many individuals. A new study shows that alcohol increases replication of the hepatitis C virus (HCV) in human cells and, by doing so, may contribute to the rapid course of HCV infection. These findings are useful to clinicians for counselling HCV-positive patients about alcohol use (17, 18). Concerning treatment, in addition to Twelve-Step Self-Help programmes, psychosocial therapy and interventions, there has been some success with pharmacotherapy. Focus had centred on medications for blocking alcohol–brain interactions that might promote alcoholism. For more information, view Epidemiology in Alcohol Research, Volume 27, Number 1, 2003 (19). As with many conditions and diseases, the sex of a person may affect the course of the disease and the treatment (please view Women and Alcohol: an Update, Volume 26, Number 4, 2002 (20)).

Another confusing issue has been hormone therapy for women to treat menopausal symptoms. The US Food and Drug Administration (FDA) claims that low-dose preparations for short periods are the safest. Wyeth, the pharmaceutical company that makes PremproTM, recently received approval for a low-dose PremproTM containing 0.45 mg of Premarin® and 1.5 mg of the progestin medroxyprogesterone acetate. The latter has been halved from the original PremproTM (21). An oestrogen ring called Femring®; is now available for oestrogen replacement therapy. Approved by the FDA in March 2003, Femring®; is a flexible, self-inserted ring that delivers oestrogen at a steady and consistent rate during the 3-month dosing period. As it contains no progesterone or progestin, a supplemental form should be added for women who have not had a hysterectomy, in order to limit their risk of developing cancerous changes in the uterine lining (22). Climara ProTM has just received FDA approval and will be available in the next few months. It is a thin, translucent patch, is the first once-a-week combined hormone therapy for the relief of moderate-to-severe vasomotor symptoms associated with menopause, such as hot flashes and night sweats. It combines a low amount of estradiol (0.045 mg), with a low dose of the progestin called levonogestrel (which has been extensively and safely used in birth-control pills). Transdermal (patch) technology allows for continuous delivery of hormones at doses much lower than in pills. If a hormone is slowly and consistently absorbed through the skin (or the vaginal lining), it does not initially pass through the liver. 'First bypass' in the liver can increase clotting factors and heart-disease-causing fats (triglycerides; 23).

As we can see, products and technologies are being introduced almost daily. As health care professionals, it is our responsibility to share this information with clients for a healthier life style. I hope you have enjoyed this column, and I look forward to more research developments in the coming months.

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