

PUBLIC HEALTH ABSTRACTS

Professor James S. Lawson, Head of the School of Health Services Management at the University of NSW, has prepared the following public health items from the literature.

COST EFFECTIVENESS OF LOWERING BLOOD CHOLESTEROL

Coronary heart disease is an important health problem in all industrialised countries except Japan. There is strong evidence that lowering serum cholesterol concentration will reduce the incidence of disease. There are three strategies available to reduce serum cholesterol concentrations: population-based promotion of better eating habits, individual dietary treatment and diet combined with drugs.

A large Norwegian study has demonstrated that the cost per life year gained over a 20-year population-based strategy was 12PS (English pound sterling). For an individual strategy based on dietary treatment, the cost was about 12,400PS per life year gain and more than 100,000PS if drugs were added for half the subjects with serum cholesterol concentrations at high levels.

The recommended conclusions are obvious — that population-based programs are very cheap and individual programs should be implemented with caution and with more selection than at present, and finally that drugs should be reserved for subjects with genetically-based high cholesterol or who are otherwise at very high risk of arteriosclerotic disease.

Kristiansen IS, Eggen AE and Thelle DS. Cost-effectiveness of incremental programs for lowering serum cholesterol concentration: is individual intervention worthwhile? *Brit Med J* 1991, 302:1119-22.

PREVALENCE OF ASTHMA RISES IN AUSTRALIAN SCHOOLCHILDREN

Australia has the second highest reported mortality from asthma in the world and over the past 10 years mortality in the under-19 age group has increased by 50 per cent. A study over the past 26 years in Melbourne has shown there is a real increase and that the changes are not due to diagnostic fashion or other statistical reasons. It is not possible with current knowledge to give accurate reasons for the increase.

Robertson CF, Heycock E, Bishop J, Nolan T et al. Prevalence of asthma in Melbourne schoolchildren: changes over 26 years. *Brit Med J* 1991, 302:1116-1118.

MENTAL RETARDATION CAN BE PREVENTED IN CHILDREN AT RISK

In the early 1960s there was hope that intervention may reduce the incidence of mild mental retardation in children at risk. So began the Milwaukee Project. This project compared groups of black children, some of whom had mothers with low intelligence, others as controls. The project attracted international interest and controversy, not the least because the principals of the study seconded the grants and developed a lucrative horse stud, much to their own disgrace and that of the University of Wisconsin. In addition, publications from the project were not produced. Finally, the results are available in a 434-page book which has been reviewed by a range of commentators.

It appears there is an unambiguous affirmative answer to the question: 'Can intervention prevent the decline in intelligence of children who are at risk because of poor

parental intelligence and social levels?' This is an important study and an important finding with policy implications for those involved in providing services for the intellectually handicapped.

Garber HL, Hodge JD, Rynders J, Dever R and Velu R. The Milwaukee Project: setting the record straight. *Am J Mental Retardation* 1991, 95:5:493-525.

HEPATITIS C VIRUS — A NEW STD

Hepatitis C virus has been recently identified. It probably causes inflammation of the liver in the same way as other viruses causing hepatitis, which in turn may lead — in the long term — to cancer of the liver. A British study has indicated that almost certainly hepatitis C virus can be transmitted during sexual intercourse, in addition to other blood-borne viral infections such as HIV and hepatitis B virus which may be transmitted during intercourse. The study found that the virus could be transmitted among homosexual and heterosexual subjects.

Tedder RS, Gilson RJC, Briggs M, Loveday C et al. Hepatitis C virus: evidence for sexual transmission. *Brit Med J* 1991, 302:1299-1302.

HEALTH AND SOCIAL STATUS — INTIMATE LINKS

Inequalities in health are not confined to differences between the rich and poor. The Whitehall Study of British civil servants — begun in 1967 — found that after 10 years of follow-up, the highest employment grade had about one-third the mortality of the lowest, despite all subjects being office workers in stable employment. None of those studied was in absolute poverty as usually understood. Differences in smoking, obesity, physical activity, blood pressure or plasma cholesterol level only partly explained the differences in mortality.

The follow-up study of sickness in this same group has confirmed that rates of sickness are similar to the rates of death. It was found also that higher-status civil servants were greater in height, had more control over their jobs and more satisfaction from their work. Reasons for these differences in health status remain unclear, but it is clear that some of the differences must have begun in early life.

Marmot MG, Smith GD, Stansfield S, Patel C et al. Health inequalities among British civil servants: the Whitehall II Study. *Lancet* 1991, 337:1387-1393.

INSTITUTES TOP OF THE RESEARCH PILE

Critical mass seems to be essential for internationally competitive research. But large research institutions may easily become bureaucratic and unproductive. Another dilemma is that most researchers insist that scientists work best when free to do whatever research they want, but those funding research want value for money and answers to problems with clinical and social importance. A review of medical research institutes in Australia by the executive editor of the British Medical Journal indicates that they seem to have found a middle way and also appear to be highly successful. These institutes are the Garvan in Sydney and the Walter and Eliza Hall, Florey, Baker Medical Research and Murdoch, all in Melbourne.

The key appears to be the granting of block financial grants from the National Health and Medical Research Council, supplemented by independent sources of funds. In this way the institutes appear to have avoided the problems outlined

above, and the National Health and Medical Research Council gets great value for its investment. Leadership and personalities are also important.

Smith R. Top of the pile: the institutes. *Brit Med J* 1991, 302:1006-1010.

SCREENING FOR CONGENITAL HIP DYSPLASIA

Screening for congenital hip dysplasia remains controversial because the diagnosis is not always easy and treatment carries some risks. The risks of treatment (which involves splinting of an unstable hip) are that the blood supply to the bones of the hip joint may be interrupted, causing serious problems.

In Australia screening is done soon after birth by clinical examinations conducted by medical staff. These are often followed up through the Early Childhood Health Services by nursing staff who routinely check hips at about four weeks and six months of age. In other countries, such as Germany, all infants are screened ultrasonically at birth and elsewhere a more selective screening policy has been pursued.

Editorial: Screening for congenital hip dysplasia. *Lancet* 1991, 337:947-948.

ULTRAVIOLET A RADIATION — STAYING WITHIN THE PALE

In simplistic terms, sunlight is composed of both ultraviolet A and ultraviolet B radiation. Ultraviolet A is particularly notable for its ability to tan before burning. Ultraviolet B radiation is the villain causing burning and is probably more associated with cancers of the skin. But both UVA and UVB cause the blotchy brown wrinkling of skin that accompanies ageing and adversely affects immunological resistance. Many sunscreens protect against the burn effects of UVB and thus allow constant sunbathing leading to tanning. But it has now been realised that a tan without burning still leads to long-term damage.

An obvious solution is to seek clothing and trees for shelter rather than sunscreen ointments. However new sunscreen ointments contain chemicals which reflect both ultraviolet A and B.

Hawk JLM. Ultraviolet A radiation: staying within the pale. *Brit Med J* 1991, 302:1036-1037.

PREVENT FALLS AND OSTEOPOROSIS

Hip fracture is the most serious consequence of osteoporosis, and more than 90 per cent of such fractures occur in people over 70 years old. A dramatic age-related increase in rates of hip fracture is widely believed to result primarily from post-menopausal and age-related osteoporosis. But preventive measures recommended to slow perimenopausal bone loss, including estrogen replacement therapy, may be less beneficial for elderly women whose bone mass may be inadequate to prevent fractures.

An American study has shown it is important to prevent falls as well as to prevent osteoporosis. Risk factors for falls include lower limb dysfunction, neurological conditions, sedative use and visual impairment.

Grisso JA, Kelsey JL, Strom BL, Chiu GY et al. Risk factors for falls as a cause of fracture in women. *New Eng J Med* 1991, 324:1326-1331.

Nitrates in bore water

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nitrate-contaminated water because of higher pH levels in their stomachs resulting in greater concentrations of nitrate-reducing bacteria.

MHA from drinking water with high nitrate levels was first reported in 1945. Cases of fatal and non-fatal MHA in infants due to bore water nitrates have been reported in the US, Canada, Belgium, England and Mexico^{7,8}. Most cases were associated with water from private bores where nitrate levels were above 20mg/L and which were also contaminated with microorganisms. Microbial infections may exacerbate the effects of MHA.

PREVENTION OF BORE WATER MHA

Infant milk formula: Infants, particularly if bottle-fed, are at greatest risk of MHA and therefore steps taken to protect them should also protect other water users. Bore water should not be used to make up infant milk formula when nitrate levels exceed 10mg/L or nitrite levels exceed 0.1mg/L.

In towns supplied with bore water, where nitrate levels are just below 10mg/L, parents should be advised that excessive evaporation of water during boiling can concentrate nitrates and nitrites in the water. Lids or enclosed containers should be used to boil water.

Bore construction: The contamination of bore water by run-off and seepage from septic tanks is less likely in deeper bores. Bores should be sited uphill from obvious pollution sources, such as septic tanks, and properly sealed at the surface to avoid direct run-off contamination around the exposed bore casing. The DWR can advise on the best methods to locate and construct bores.

Regular testing of private bores used for drinking:

Bore water should be tested twice yearly for its suitability for drinking purposes. Testing should also be conducted during periods of prolonged drought and after heavy rains following drought, especially in catchments with intensive fertiliser use and developments with numerous septic tanks and nearby rubbish tips.

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1. National Health and Medical Research Council/Australian Water Resources Council. Guidelines for drinking water quality in Australia, 1987. AGPS, Canberra, 1987.
2. Petersdorf RG, Adams RD, Braunwald E, Isselbacher KJ, Martin JB and Wilson JD, Eds. Harrison's Principles of Internal Medicine, 10th ed. McGraw-Hill Book Company, 1983.
3. Klaassen CD, Amdur MO and Doull J, Eds. Casarett and Doull's Toxicology: The basic science of poisons, 3rd ed, 1986.
4. Johnson CJ and Kross BC. Continuing importance of nitrate contamination of groundwater and wells in rural areas. *Am J Ind Med* 1990, 18:449-456.
5. Jiwan JS and Gates G. Nitrates in groundwaters of NSW. Murray-Darling Workshop, 1990, Mildura (Abstracts).
6. Department of Water Resources Hydrogeology Unit (private communication).
7. Bucklin R and Myint MK. Fatal methaemoglobinemia due to well water nitrates. *Ann Int Med* 1960, 52(3):703-705.
8. Thompson RB. Disorders of the blood: a textbook of clinical haematology. Churchill Livingstone 1977.