

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

SMOKING REDUCES BONE DENSITY

Osteoporosis is an increase in bone fragility that accompanies aging. Bone density is an important determinant of bone strength and a predictor of fractures. Effective methods of minimising loss of bone during adulthood will prevent osteoporosis. The results of an American study among 41 pairs of female twins, of whom 21 were monozygotic pairs, has clearly demonstrated the harmful effect of smoking on bone density. The study demonstrated that women who smoked one packet of cigarettes a day throughout adulthood will, by the time of menopause, have an average deficit of 5-10 per cent in bone density – sufficient to increase the risk of fracture. These results were not confounded by measured lifestyle factors.

Hopper JL and Seeman E. *New Eng J of Med* 1994; 330:387-92.

TB IN INNER-SYDNEY CHILDREN

There is a high prevalence of non-contagious tuberculosis infection in children aged 12-14 years in Sydney. Ten per cent of 1,836 children were Mantoux positive. Only two of the children were found to have active tuberculosis. The Sydney-based authors argue for the development of an organised strategy as a consequence of this survey.

Alperstein G, Fett MJ, Reznik R et al. *Med J of Aust* 1994; 160:197-201.

PETROL SNIFFING AND BRAIN DAMAGE

Petrol sniffing is not uncommon among some disadvantaged Australian children. Chronic petrol sniffing is extremely dangerous, with a fatality ratio of 8 out of 20 patients admitted to hospital. The deaths and irreversible brain damage are due to the complex toxins in modern petrol. The long-term effects are probably due to lead poisoning. The authors suggest a need for local strategies for prevention, particularly as treatment outcomes are so disappointing.

Goodheart RS and Dunne JW. *Med J of Aust* 1994; 160:178-181.

RAPID RESUSCITATION AFTER SEVERE HEAD INJURY

One of the reasons for poor outcomes following severe head injury is catastrophic loss of blood pressure which leads to lack of oxygen to the brain. Patients at accidents should be resuscitated on the spot and then transported quickly to a major trauma centre. This approach requires doctors, paramedical personnel and well-equipped ambulances and helicopters on standby, which is expensive and difficult to achieve with scattered rural populations.

Wilden JN. *Lancet* 1993; 342:1378.

AIDS: THE THIRD WAVE

Three broad epidemiological patterns have unfolded with respect to the epidemic of Acquired Immune Deficiency Syndrome (AIDS). In regions associated with pattern one (US, Canada, Western Europe, Australasia) human immunodeficiency virus (HIV) has spread mainly among gay and bisexual men and injecting drug users. Those with heterosexually acquired infection form a small proportion of cases. In pattern two areas (sub-Saharan Africa and

South America) most people have acquired HIV heterosexually. A third pattern is found in the Asia-Pacific, Eastern Europe and the Middle East. Thailand is the best study and most chilling example of this third wave is the AIDS epidemic. HIV infection was first reported in Thailand in 1984. Subsequently, three groups of individuals have successively borne the brunt of the spreading epidemic: injecting drug users, female commercial sex workers and young heterosexual men. Asia's epidemic may dwarf all others in scope and impact.

Editorial, *Lancet* 1994; 343:186-88.

MULTIPLE SCLEROSIS IN AUSTRALIA

Although the precise cause of multiple sclerosis (MS) is not known, clearly some environmental and genetic factors are important. A major Australian study has confirmed that the frequency of the disease increases with distance from the equator. There are more cases in southern parts of Australia than in northern parts, and the condition is more common in white populations – particularly in people of Scottish descent. There appears to have been a small increase in the incidence of multiple sclerosis in Australia in recent decades. The reason for this is unknown. While MS is a relatively rare disease, the crude prevalence in Australia is 22.6/100,000 for males and 51.6/100,000 for females. The higher incidence in females has been long recognised but again the cause is unknown.

McLeod JG, Hammond SR and Hallpike JF. Epidemiology of Multiple Sclerosis in Australia. *Med J of Aust* 1994; 160:117-122.

LINK BETWEEN AIR POLLUTION AND DEATH

An association between death rates and particulate air pollution has long been suspected. A large 15-year American study has demonstrated that the mortality rate ratio for the most polluted US cities compared with the least polluted was 1.26. This is significant. Air pollution was positively associated with death from lung cancer and cardiopulmonary disease but not with death from other causes. Mortality was most strongly associated with air pollution with fine particulates. Obvious confounding factors such as cigarette smoking were controlled.

Dockery DW, Pope CA, Xu X et al. *New Eng J Med* 1993; 329:1753-9.

LEFT-HANDED PEOPLE AND EARLY DEATH

The Dean of the Faculty of Arts at Deakin University, Geelong, Bryan Turner, has reviewed the extraordinary fact that being left-handed reduces the lifespan for 10 per cent of the population. This is explained in a number of ways. The most obvious is the high rate of injuries among left-handers which can lead to death, because most domestic and industrial appliances are designed for right-handers. There appear to be associated behavioural problems with being left-handed which can lead to alcoholism and suicide. A United States study has found the average age of death for right-handed baseball players was about 75, while that of left-handed baseball players was 66. The reasons were a product of differences of immunological disturbances,

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behavioural differences and a much higher rate of accidents among the left-handed.

Turner BS. *Br Med J* 1993; 307:1578.

PELVIC INFLAMMATORY DISEASE

Pelvic inflammatory disease refers to infection of the uterus, fallopian tubes and adjacent pelvic structures that is not associated with surgery or pregnancy. This infection is almost always the consequence of sexually transmitted bacterial infections. Problems of infertility and ectopic pregnancy are the direct result of this medical, social and economic problem. The most important causative organisms are *Chlamydia trachomatis* and *Neisseria gonorrhoeae*. More than half of all cases are caused by one or both of these sexually transmitted micro-organisms.

Prevention of sexually transmitted diseases, or vigorous treatment with antibiotics when they occur, is essential.

McCormack WM. *New Eng J Med* 1994; 330:115.

FLUORIDE POISONING

A disturbing report from Alaska has shown that excess added fluoride to public water systems was the cause of an outbreak of acute fluoride poisoning. The poisoning caused nausea, vomiting, diarrhoea and abdominal pain. Some 296 people were poisoned and one died. The fluoride concentration of the water samples from the implicated source was 150 milligrams per litre – about 150 times the standard level recommended. The greatly excessive fluoridation occurred because there were major electrical and mechanical defects in the fluoride pumping system. The fluoride pump worked four times faster than expected,

which dramatically increased the fluoride concentration in the holding tank.

Gessner BD, Beller MD, Middaugh JP et al. *New Eng J Med* 1994; 330:95-9.

CHANGING ONSET OF THE MENARCHE

The menarche indicates the capacity to reproduce. It is the onset of menstruation in females. In the past century there has been a decrease in age toward earlier menarche of about three to four months a decade. The age of the menarche is determined by factors which act in combination, including genetics, socioeconomic conditions, health, nutrition and some types of exercise. The importance of genetic factors is illustrated by the similar age of menarche in members of an ethnic population and in mother-daughter pairs.

Studies in the United Kingdom and in Canada suggest the levelling out of the age of the menarche and indeed an increase in the age of the menarche which has been recently observed is probably a consequence of the fashion towards being slim and to undertake exercise.

Rees M. *Lancet* 1993; 342:1375.

ALCOHOL INTAKE AND MYOCARDIAL INFARCTION

The effects of alcohol consumption on cardiovascular disease are complex. Although heavy alcohol intake increases overall mortality and mortality due to cardiovascular diseases, moderate intake appears to exert a protective effect against coronary heart disease compared with drinking no alcohol. A large American study has confirmed these findings and identified that one of the mechanisms involved is that alcohol appears to increase levels of high density lipoprotein cholesterol – the “protective” cholesterols.

Gaziano JM, Buring JE, Breslow JL et al. *New Eng J Med* 1993; 329:1829-34.

Hospital-related mortality

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and monitoring would be fruitful. Case reviews conducted by expert committees¹¹ have classified 64 per cent of deaths reviewed as inevitable or fortuitous – a fact which underlines the need to develop finely tuned instruments to detect quality of care differences between institutions. A single measure is not appropriate for all conditions.

The next steps in our exploration of hospital-related mortality will include:

- evaluation of reported methods for using existing inpatient data in the measurement of comorbidity and severity of illness and in risk adjustment; and
- comparison of the use of routinely reported inpatient data and these algorithms against results derived from more comprehensive clinical databases, e.g. Trauma Registries.

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2. 3M Health Information Systems & Commonwealth Department of Health Housing & Community Services. Australian National Diagnosis Related Groups Definitions Manual Version 1.
3. Chan LY, Gibberd RW, Dickman PW. A new index to measure systematic regional variation in mortality (unpublished).
4. NSW Public Hospital Comparison Data 1991/92. NSW Health Department, State Health Department Publication No. (IC) 93-134.
5. US Congress, Office of Technology Assessment. The Quality of Medical Care: Information for Consumers, OTA-H-386 (Washington, DC; US Government Printing Office, June 1988) Chapter 4, pp 73ff.
6. Burns LR, Wholey DR. The effects of patient, hospital and physician characteristics on length of stay and mortality. *Medical Care Review* 1991; 29(3):251-271.
7. NSW Health Department. NSW Health Information Management Strategy Report Volume 1 (in press).
8. Romano, PS. Can administrative data be used to compare the quality of health care? *Medical Care Review* 1993; 50(4):451-477.
9. Orchard C. Comparing healthcare outcomes. *Brit Med J* 1994; 308:1493-1496.
10. Romano PS, Roos LL, Jollis GJ. Response: Further evidence concerning the use of a clinical comorbidity index with ICD9-CM administrative data. *J Clin Epidem* 1993; 46(10):1085-1090.
11. Warden JC, Borton CL, Horan BF. Mortality associated with anaesthesia in New South Wales, 1984-1990. Unpublished.