

MEDLARS BIBLIOGRAPHY

PUBLICATIONS OF RELEVANCE TO PAPUA NEW GUINEA AND MELANESIA

Bibliographic Citation List generated from MEDLARS

- 1 Expanded programme on immunization (EPI) immunization schedules in the WHO Western Pacific Region, 1995.
Wkly Epidemiol Rec 1996 May 3;71(18):133-137.
There are 36 countries/areas in this Region; Mongolia was transferred to the Western Pacific Region in 1995. No data are available from the Cook Islands, Nauru and New Caledonia. BCG is used in all but 6 countries/areas (American Samoa, Australia, Guam, New Zealand, Northern Mariana Islands and Palau). Most countries/areas give BCG at birth; Japan gives it at 3 months, the Republic of Korea at 4 weeks and Samoa at 5 years of age. Nine countries give 2 doses of BCG and 4 give 3 doses, up to 15 years of age. Mongolia gives 4 doses up to 18 years of age. Diphtheria-pertussis-tetanus (DPT) vaccine is used as a primary series of 3 doses in all countries/areas; 17 countries give 1 to 3 booster doses of DPT vaccine in the first year of life or later. Diphtheria-tetanus (DT) booster doses are given in Brunei Darussalam, Mongolia and New Zealand. Td is also given in New Zealand. Oral poliovirus vaccine (OPV) is used in a primary series of 3 doses simultaneously with DPT vaccine in all countries/areas. Eight countries/areas use an additional dose of OPV at birth (Cambodia, Fiji, Hong Kong, Kiribati, Lao People's Democratic Republic, Marshall Islands, Papua New Guinea and Tuvalu). A booster dose of OPV in the second year of life is used in 9 countries/areas and a booster dose of OPV is given to schoolchildren in 16 countries/areas. Measles vaccine is given in all countries/areas from 8-15 months of age usually in the form of monovalent measles vaccine, except in Macau. In 4 countries/areas, it is given in the form of measles-mumps-rubella (MMR) vaccine (Guam, Hong Kong, Palau and Singapore). The 2-dose policy is implemented in 4 countries/areas (American Samoa, New Zealand, Palau and Samoa). In Australia and Palau, the second dose is given as MMR vaccine. The age at the second dose varies from 4 to 13 years of age. Rubella vaccine is given in 4 countries/areas to girls between 10 and 14 years of age (Fiji, French Polynesia, Japan and Macau). In Hong Kong, it is not specified if only girls receive rubella vaccine. In Australia and New Zealand, rubella vaccine is given to seronegative women immediately after delivery. Hepatitis B is used in all but 7 countries/areas (Cambodia, China, Guam, Kiribati, Lao People's Democratic Republic, Tokelau and Vietnam). All countries which give hepatitis B vaccine use 3 primary doses in infancy, the first dose being given at birth in 23 countries/areas. In Australia and Japan, this vaccine is given to groups at risk. Tetanus toxoid (TT) is used for pregnant or nonpregnant women of childbearing age. It is used in 14 countries/areas, but in Australia and Palau the target group is schoolchildren. The schedules include 2-5 doses of TT.
- 2 **Allen JS, Lambert AJ, Johnson FY, Schmidt K, Nero KL.**
Antisaccadic eye movements and attentional asymmetry in schizophrenia in three Pacific populations.
Acta Psychiatr Scand 1996 Oct;94(4):258-265.
Antisaccadic eye movements were examined in 50 patients with schizophrenia and in 77 controls in three Pacific populations, namely New Zealand, Palau and Papua New Guinea. Despite the great biocultural variation encompassed by these three populations, schizophrenic patients made significantly more antisaccadic errors than controls (36% vs 13%), as has been demonstrated previously in other populations. This neurocognitive deficit may be consistent with frontal lobe dysfunction in schizophrenia. In addition, patients with schizophrenia made significantly more errors than expected when the target was presented in the right visual field (RVF). This trend was observed in patients from all three study areas, and was not seen in any of the control populations. Antisaccadic test performance in schizophrenia may be influenced by lateralized (left hemisphere) neuroanatomical impairment.
- 3 **Al-Yaman F, Genton B, Reeder JC, Anders RF, Alpers MP.**
Evidence that recurrent *Plasmodium falciparum* infection is caused by recrudescence of resistant parasites.
Am J Trop Med Hyg 1997 Apr; 56(4):436-439.
Isolates of *Plasmodium falciparum* obtained from 12 children attending different health facilities in the Madang Province, Papua New Guinea were typed for allelic variants of merozoite surface protein-1 and merozoite surface protein-2. Blood was obtained just before treatment with either amodiaquine or chloroquine and at intervals following treatment. All patients examined were found to be infected with genetically different parasites. Nine of the children were found to have single infections while three had mixed infections. In all patients, parasites reappearing in the blood following treatment had the same genotype as parasites in the primary infection. These results indicate that parasites reappearing in the blood following treatment were the result of true recrudescence and not new infections.
- 4 **Al-Yaman F, Genton B, Reeder JC, Mokela D, Anders RF, Alpers MP.**
Humoral response to defined *Plasmodium falciparum* antigens in cerebral and uncomplicated

malaria and their relationship to parasite genotype. *Am J Trop Med Hyg* 1997 Apr;56(4):430-435.

The prevalence and concentration of IgG antibodies to defined *Plasmodium falciparum* antigens were assessed in serum samples of 97 children with cerebral malaria and 146 children with uncomplicated malaria. The antigens used included the schizont extract, ring-infected erythrocyte surface antigen, the C-terminal region of merozoite surface antigen-1 (MSA-1) (BVp42), and three recombinant proteins of MSA-2 (FC27, 3D7 and d3D7). Parasite isolates from 24 children with cerebral malaria and 22 children with uncomplicated malaria were genotyped for MSA-1 and MSA-2. The distribution of parasite genotypes belonging to the different allelic families was similar in both the cerebral and uncomplicated malaria groups. There were higher antibody levels to antigens derived from the infecting parasite genotype than to heterologous genotypes, but this difference was only statistically significant for antibody against the d3D7 antigen among children infected with the 3D7 parasite genotype (mean log = 4.72 versus 3.45 antibody units [AU]; $p = 0.029$). Those who died were more likely to be infected with the FC27 genotype and had lower antibody levels to MSA-2 of the 3D7 type than had cerebral malaria patients who survived (mean log = 2.94 versus 3.79 AU; $p = 0.049$). Antibodies against parasites of the 3D7 genotype are associated with a better prognosis among children with cerebral malaria partly because these children are more likely to be infected with parasites of this genotype rather than the FC27 genotype, which appears to be more virulent.

5 **Ambihaipahar U, Sivakumaran S.**

Health insurance and medical schemes in Papua New Guinea.

Med Law 1996;15(4):633-642.

Papua New Guinea (PNG) is an independent nation in the Pacific region. It is located due north of Australia. It is made up of a main island and about 100 smaller islands in the Bismarck and Solomon Seas, to the north and east of the main island. The population of PNG is about 4.0 million, the total land area approximately 463,840 sq km and population density 8/square km. Only about 15% of the population is urban, average household size is 5.4 and 45.1% literate. Politically and administratively, it is divided into nineteen provinces and a National Capital District. Since 85% of the population lives in rural areas, the provision of services to the rural areas is constrained by difficult terrain, poor infrastructure and geographic dispersion of the rural population. PNG is a developing Pacific nation with an economy largely based on primary and mining industries. According to the 1993 World Bank estimates, more than 30% of the Gross Domestic Product (GDP) is derived from agriculture. The expenditure on health, as a percentage of the GDP, was 2.8% in 1989. This is low compared to developed nations (ranging from 8% to 14%), but very reasonable compared to the rest of the developing world. Indonesia for example expends 2.7% of GDP on health care. All government

expenditures declined sharply in the post 1989 period, including health care expenditures. However, by 1989, the expenditure per capita on health was almost back to 1986 levels. PNG has a small population base relative to the other countries in its World Bank peer group. However, its per capita GDP is reasonable at US\$850, the third highest amongst its group and higher than Indonesia, for example, which is US\$700/head. Like almost all countries in its group, it experienced a negative growth rate over the decade 1980-1991 but kept inflation at a reasonable 5.2% for the same period. On most other indicators PNG fares reasonably well, in comparison with other developing nations.

6 **Attenborough RD, Burkot TR, Gardner DS.**

Altitude and the risk of bites from mosquitoes infected with malaria and filariasis among the Mianmin people of Papua New Guinea.

Trans R Soc Trop Med Hyg 1997 Jan-Feb; 91(1):8-10.

The Mianmin are a mobile population occupying a remote lower montane area at 100-1200 m altitude in the north-western interior of Papua New Guinea (PNG). Major medical problems include malaria and bancroftian filariasis. An entomological survey conducted along an altitudinal transect from 170 to 1000m identified *Anopheles koliensis* as the predominant malaria vector below 650 m, with *A. punctulatus* dominating at the higher elevations. Proportions of mosquitoes with malaria circumsporozoite antigens diminished with increasing altitude, as did the proportion of mosquitoes infected with stage 3 larvae of *Wuchereria bancrofti*. These patterns are consistent with increases in the length of the extrinsic incubation period associated with the lower temperatures found at higher altitudes. Inoculation rates varied less regularly with altitude, owing to local variation in biting rates, but were sufficient even at the higher elevations to maintain a high parasite prevalence in the human population. Results support recent suggestions that the 'population-sink' model of the PNG highland fringes needs additionally to consider local variation due to non-altitude-related ecological factors.

7 **Baquero F.**

Pneumococcal resistance to beta-lactam antibiotics: a global geographic overview.

Microb Drug Resist 1995 Summer;1(2):115-120.

Beta-lactam resistance in *Streptococcus pneumoniae* has spread over the entire world. The 10 main foci of resistant organisms are located in the following areas: (1) southwest Europe (Spain, France, Portugal), (2) central-east Europe (Hungary, Roumania, Bulgaria, Turkey) and Israel, (3) northwest Russia, (4) South Africa, (5) Japan and South Korea, (6) Papua New Guinea, (7) Alaska, (8) southeast North America, (9) southwest North America, and (10) south cone in South America. A comparison of the presumed factors influencing the increase of pneumococcal resistance in these foci with those occurring in low incidence areas, such as central-north Europe,

Scandinavia, north and western Africa, or middle-north Mediterranean countries (Italy, Greece) should provide the clues to predict and prevent further spread of resistant pneumococci.

8 **Bilsborough J, Baumgart K, Bathurst I, Barr P, Good MF.**

Fine epitope specificity of antibodies to region II of the *Plasmodium vivax* circumsporozoite protein correlates with ability to bind recombinant protein and sporozoites.

Acta Trop 1997 May 15;65(2):59-80.

Recent work has suggested that important B- and T-cell epitopes on the circumsporozoite protein (CSP) of *Plasmodium vivax* lie external to the major repeat regions of the protein. We have studied two naturally exposed human populations (Caucasian and Papua New Guineans) and determined the antibody response to yeast-derived recombinant CSPs, overlapping synthetic peptides spanning amino acids 76-348 of the Belem *P. vivax* CSP and overlapping peptides representing the variant repeats of the VK247 strain of *P. vivax*. We have demonstrated that the *P. vivax* CSP-specific antibody response is directed towards areas within the repeat region as well as areas external to this; but the dominant epitopes recognized by the two populations studied, were distinct. One epitope, lying external to the repeats and recognized by both populations, partially overlaps an area of the protein referred to as region II-plus. Sera from malaria-exposed Papua New Guineans and Thais contained antibodies to this epitope (V22, single letter amino acid sequence TCGVGVRVRRRVAANKKPE) which were capable of recognizing sporozoites, as determined by quantitative inhibition IFA. 17% of PNG sera had antibodies to this peptide compared with 33% who had antibodies to the central repeats of the protein. Immunization of mice with recombinant CSP did not induce antibodies to V22. However, immunization with overlapping peptide epitopes representing this region (V21 or V22) induced specific antibodies but only two sera recognized both V21 and V22 and, by inference, the overlapping peptide sequence (TCGVGVRVRR). Antibodies in these two sera could bind recombinant CSP in ELISA; however, in contrast, nine sera which recognized either V21 or V22 alone did not bind CSP. Only one of two sera containing antibodies recognizing CSP stained *P. vivax* sporozoites. This serum also recognized an epitope dependent upon two amino acids aminoterminal to V22. These data suggest that the fine specificity of antibodies is a critical determinant for binding to both reCSP and sporozoites.

9 **Bouree P.**

[Vanuatu: recent aspects of an ex condominium].
Med Trop Mars 1996;56(3):225-230.

10 **Brookes DL, Ritchie SA, Van Den Hurk A, Fielding JR, Loewenthal MR.**

Plasmodium vivax malaria acquired in far north Queensland.
Med J Aust 1997 Jan 20;166(2):82-83.

In February 1996, vivax malaria was diagnosed in a man from a remote community in far north Queensland who had not visited a malarious area for the past 19 years. Microscopy and DNA studies of blood from other residents of the community did not identify a source of infection. It was suspected the infection was transmitted by mosquitoes from a neighbour who had been infected in Papua New Guinea, but whose blood was not available for DNA tests.

11 **Burkot TR, Schriefer ME, Larsen SA.**

Cross reactivity to *Borrelia burgdorferi* proteins in serum samples from residents of a tropical country nonendemic for Lyme disease.

J Infect Dis 1997 Feb;175(2):466-469.

Reports of Lyme disease from areas where the disease is not endemic have increased. Eighty-six human serum samples from Papua New Guinea (nonendemic for Lyme disease) were examined for the presence of IgG antibodies that recognize *Borrelia burgdorferi* antigens, using the currently recommended two-tiered system of analysis (sensitive ELISA with Western blot). The percentage of positive tests dropped from 50% to 10% when individual negative controls were included in the two-tiered analysis. Positive serum samples failed to inhibit the growth of *B. burgdorferi* in culture and did not yield positive reactions in the fluorescent treponemal antibody-absorption test. These characteristics, together with atypical Western blot antigen recognition patterns and the absence of known vectors, provide evidence that seropositive results for these persons are not the result of exposure to *B. burgdorferi*. Individual negative controls may minimize false-positive results for serologic tests for Lyme disease, and these tests must be interpreted in the context of clinical and epidemiologic data.

12 **Clegg A, Passey M, Yoannes M, Michael A.**

High rates of genital mycoplasma infection in the highlands of Papua New Guinea determined both by culture and by a commercial detection kit.

J Clin Microbiol 1997 Jan;35(1):197-200.

Duplicate vaginal swabs were collected from 100 women, and comparisons were made between an in-house broth-agar culture system and a commercially available kit, the Mycoplasma IST kit (bioMerieux), for the detection of *Mycoplasma hominis* and *Ureaplasma urealyticum*. There was good agreement between the two systems for detection of the genital mycoplasmas in terms of sensitivity, with values of > 92% being obtained. In terms of specificity, the mutual comparisons were less favorable, though specificity values of > 72% were obtained. Statistically there was no significant difference in the performance of the two tests ($p < 0.1$ for both *M. hominis* and *U. urealyticum*). While the broth-agar culture system was considerably less expensive than the kit, the Mycoplasma IST kit provided additional information on antibiotic susceptibilities and had the advantages of a shelf life of up to 12 months and not requiring the preparation of culture media. The prevalences of colonization obtained for *M.*

- hominis* and *U. urealyticum* were extremely high in this randomly selected group of women from periurban and rural settlements in the Eastern Highlands of Papua New Guinea, being $\geq 70\%$ for *M. hominis* and $\geq 78\%$ for *U. urealyticum*. Colonization with both genital mycoplasmas simultaneously was also very common, with $\geq 60\%$ of women being colonized by both *M. hominis* and *U. urealyticum*.
- 13 **Cooper RD, Waterson DG, Kupo M, Foley DH, Beebe NW, Sweeney AW.**
Anopheline mosquitoes of the Western Province of Papua New Guinea.
J Am Mosq Control Assoc 1997 Mar;13(1):5-12.
A survey of the *Anopheles* species of Western Province, Papua New Guinea, was made in April-May 1992. A total of 6,427 specimens was collected from 74 sites within the province using carbon dioxide-baited light traps and larval sampling. Eleven species were identified using morphological characteristics, allozyme analysis, and species-specific DNA probes. These were, in order of prevalence: *Anopheles farauti* 2 (51 sites), *An. bancroftii* (17 sites), *An. farauti* s. s. (16 sites), *An. longirostris* (9 sites), *An. farauti* 3 (7 sites), *An. punctulatus* (4 sites), *An. koliensis* (4 sites), *Anopheles* sp. near *punctulatus* (4 sites), *An. meraukensis* (4 sites), *An. farauti* 4 (3 sites), and *An. novaguinensis* (2 sites). Members of the *An. farauti* complex made up 93.3% of the specimens collected with *An. farauti* 2 being the most abundant and widespread species inland and *An. farauti* s. s. the dominant species on the coast. The abundance and distribution of the species are discussed.
- 14 **Dowse GK.**
Incidence of NIDDM and the natural history of IGT in Pacific and Indian Ocean populations.
Diabetes Res Clin Pract 1996 Oct; 34(Suppl):S45-S50.
The prevalence of both NIDDM and IGT vary considerably within and between developing island populations of the Pacific and Indian Ocean regions. Longitudinal data have been collected recently in a number of these populations, allowing incidence rates to be compared. The incidence of NIDDM in adults ranged from a low of 1.2/1000 person-years (p.y.) in peri-urban and rural Papua New Guinea (PNG) Highlanders to 22.5/1000 p.y. in Micronesian Nauruans and 24.0/1000 p.y. in the rural Wanigelas of coastal PNG. Intermediate rates were observed in Polynesian Western Samoans (16.6 and 5.7/1000 p.y. in urban and rural areas, respectively) and ethnically diverse Mauritians: Asian Indians (15.8), African-origin Creoles (12.2) and Chinese (10.4/1000 p.y.). When stratified by age and body mass index (BMI), incidence in Wanigelas exceeded rates observed in Pima Indians, and rates in Mauritians were higher than those of Nauruans. For subjects with IGT at baseline, rates of conversion to NIDDM ranged from 19.0 to 102.6/1000 p.y. Particularly after stratifying for age and body mass index, it was apparent that there was less variation between populations in rates of decompensation from IGT than was observed for total incidence. The relative risk of conversion to NIDDM for IGT versus normal subjects ranged from 2.1 in urban Samoans to 7.6 in Nauruans, but most estimates exceeded 5.
- 15 **Dwyer DE, Ge YC, Wang B, Bolton WV, McCormack JG, Cunningham AL, Saksena NK.**
First human immunodeficiency virus type 1 sequences in the V3 region, nef and vpr genes from Papua New Guinea.
AIDS Res Hum Retroviruses 1997 May 1; 13(7):625-627.
- 16 **Dwyer JM, Lovell Jones S.**
The gathering storm that is the HIV epidemic in Papua New Guinea.
Aust NZ J Med 1997 Feb;27(1):3-5.
- 17 **Dye C, Williams BG.**
Multigenic drug resistance among inbred malaria parasites.
Proc R Soc Lond B Biol Sci 1997 Jan 22; 264(1378):61-67.
Recent population genetic studies on the malaria parasite *Plasmodium falciparum* have confirmed that selfing is more frequent where the transmission rate is lower, with inbreeding coefficients estimated to be 0.33 and 0.92 for sites in Tanzania and Papua New Guinea (PNG), respectively. These geographical differences in *Plasmodium* mating patterns have been linked to the rate of spread of chloroquine resistance CQR, which, according to some measures, has been slower in Tanzania than in PNG. It has been proposed that the former observation explains the latter, although the theoretical argument linking the two is based on limited simulation studies. Taking a more analytical approach here, we first establish the relevant relationship between the coefficient of inbreeding (F, within loci) and the recombination rate r, between loci, defining an 'effective recombination rate', $r' = r(1-F)$. We then show that the emergence of multigenic drug resistance can indeed be slowed (or even quickened) by more outcrossing, but only when resistance is determined by two or more genes, none of which independently confers significant protection. The resistance genes should both be initially rare, and subject to low selection pressure. The analysis does not completely discount the hypothesis that inbreeding significantly influences the spread of CQR, but we show that it can only do so under a restrictive set of conditions, and that these conditions are not satisfied by some laboratory and field data. We discuss some of the wider implications of these results for the evolution of multigenic resistance.
- 18 **Dyke T, Kitembing RJ.**
Mothers' preference for the colour of oral medication for their children in Papua New Guinea.
Trop Doct 1996 Oct;26(4):184-185.
- 19 **Farber G.**
Fiji: a country that loves family.

Midwifery Today Childbirth Educ
1996;Winter(40):57-58.

- 20 **Farrant JM, Traill Z, Conlon C, Warren B, Mortensen N, Gleeson FV, Jewell DP.**

Pig-bel like syndrome in a vegetarian in Oxford.
Gut 1996 Aug;39(2):336-337.

Enterocolitis necroticans or pigbel is a rare condition characteristically affecting chronically malnourished people who abruptly increase their intake of protein. The classic presentation of the disease as seen in the highlands of Papua New Guinea is that of a necrotising enterocolitis after the ritual ingestion of contaminated pork. In this context, the presentation of the same disease in a well-nourished white vegetarian in Oxford was all the more intriguing.

- 21 **Fraser T, Michon P, Barnwell JW, Noe AR, Al-Yaman F, Kaslow DC, Adams JH.**

Expression and serological activity of a soluble recombinant *Plasmodium vivax* Duffy binding protein.

Infect Immun 1997 Jul;65(7):2772-2777.

Plasmodium vivax Duffy binding protein (DBP) is a conserved functionally important protein. *P. vivax* DBP is an asexual blood-stage malaria vaccine candidate because adhesion of *P. vivax* DBP to its erythrocyte receptor is essential for the parasite to continue development in human blood. We developed a soluble recombinant protein of *P. vivax* DBP (rDBP) and examined serologic activity to it in residents of a region of high endemicity. This soluble rDBP product contained the cysteine-rich ligand domain and most of the contiguous proline-rich hydrophilic region. rDBP was expressed as a glutathione S-transferase (GST) fusion protein and was isolated from GST by thrombin treatment of the purified fusion protein bound on glutathione agarose beads. *P. vivax* rDBP was immunogenic in rabbits and induced antibodies that reacted with *P. vivax* and *Plasmodium knowlesi* merozoites. Human sera from adult residents of a region of Papua New Guinea where malaria is highly endemic or *P. vivax*-infected North American residents reacted with rDBP in an immunoblot and an enzyme-linked immunosorbent assay. The reactivity to reduced, denatured *P. vivax* rDBP and the cross-reactivity with *P. knowlesi* indicated the presence of immunogenic conserved linear B-cell epitopes. A more extensive serologic survey of Papua New Guinea residents showed that antibody response to *P. vivax* DBP is common and increases with age, suggesting a possible boosting of the antibody response in some by repeated exposure to *P. vivax*. A positive humoral response to *P. vivax* DBP correlated with a significantly higher response to *P. vivax* MSP-1(19). The natural immunogenicity of this DBP should strengthen its usefulness as a vaccine.

- 22 **Fujimoto WY.**

Overview of non-insulin-dependent diabetes mellitus (NIDDM) in different population groups.
Diabet Med 1996 Sep;13(9 Suppl 6):S7-S10.

There are remarkable world-wide differences in

the prevalence of diabetes, ranging from virtually 0% in Papua New Guinea, to over 50% in the Pimas of Arizona. There are also notable rural-urban (e.g. Polynesians in rural and urban Western Samoa) and native-migrant (e.g. Chinese in China and in Mauritius) differences. The reporting of a high prevalence of diabetes in many populations that have undergone either urbanization or migration suggests that environmental factors related to lifestyle are contributory. Two such factors may be physical inactivity and dietary animal fat. There are also remarkable differences in ethnic susceptibility to non-insulin-dependent diabetes mellitus (NIDDM), indicative of a strong genetic factor. Obesity is a risk factor for NIDDM. In addition to body weight, however, the pattern of distribution of body fat must also be considered. In some ethnic groups a central pattern of body fat distribution has been shown to be a significant risk factor even in the absence of obesity. This is particularly true in many Asian populations. It is proposed that genetic predisposition plus environment (lifestyle) interact and lead to visceral adiposity and insulin resistance, and that heredity and lifestyle also interact to cause a beta-cell lesion that affects insulin production and secretion. Development of insulin resistance facilitates the emergence of the beta-cell lesion. A consequence of this sequence of events is the development of glucose intolerance, and eventually, NIDDM.

- 23 **Futatsuka M, Inaoka T, Ohtsuka R, Sakurai T, Moji K, Igarashi T.**

Hand-arm vibration in tropical rain forestry workers.

Cent Eur J Public Health 1995;3(Suppl):90-92.

Working conditions and health hazards including vibration syndrome related to forestry work using chain-saws were studied in Papua New Guinea and Indonesia. The subjects comprised 291 workers including 97 chain-saw operators. The health examination consisted of peripheral circulatory and sensory tests in the upper extremities. The vibration spectrum measured at the handle of the chain-saw indicated that these acceleration levels would lead to a moderately high risk of hand-arm vibration syndrome (HAVS). The peripheral circulatory function tests revealed dysfunction after more than five years vibration exposure. However, in general, the results of the function tests and subjective complaints showed fewer health problems compared to those of Japanese forestry workers. The reasons for such differences of vibration effects seem to be the following: (1) warmer climate (more than 25 degrees C throughout the year), (2) young workers and short work experience, (3) short-time vibration exposures on working days in the natural forests, (4) seasonal changes in logging work, (5) healthy workers' effects. Thus, we found no clear evidence that the workers of our study suffered from HAVS. A principal component analysis was applied. The factor score of the components of the reactive dynamics of peripheral circulation differed significantly after more than five years' exposure. On the other hand, we cannot deny the possibility

that subclinical dysfunction of peripheral circulation may be caused by chain-saw operation in the tropics in future. Further investigations on the HAVS among forestry workers in the tropic environment are needed.

24 **Geh SL, Vincent A, Rang S, Abrahams T, Jacobson L, Lang B, Warrell D.**

Identification of phospholipase A2 and neurotoxic activities in the venom of the New Guinean small-eyed snake (*Micropechis ikaheka*). *Toxicon* 1997 Jan;35(1):101-109.

The Papua New Guinean small-eyed snake (*Micropechis ikaheka*) is recognised as a cause of life-threatening envenoming in certain parts of New Guinea. The clinical features suggest the presence of toxins acting at the neuromuscular junction and on muscle. We have used the mouse phrenic nerve hemidiaphragm preparation, a phospholipase A2 assay, and 125I-neurotoxin-binding radioimmunoassays to look for toxic activities in the crude venom and in preliminary high-performance liquid chromatography (HPLC) fractions. *Micropechis ikaheka* venom at 1 and 3 micrograms/ml completely abolished nerve-evoked muscle twitch within 70 min at 37 degrees C. There was also a sustained contracture of the muscle and some reduction in twitch tension evoked by direct stimulation; these were explained by the presence of phospholipase A2 activity. The venom inhibited the binding of 125I-alpha-bungarotoxin to detergent-extracted human muscle acetylcholine receptor (AChR), and inhibited acetylcholine receptor function in a muscle cell line. It also inhibited binding of 125I-omega-conotoxin GVIA to detergent-extracted human frontal cortex voltage-gated calcium channels, but this appeared to be dependent on the phospholipase A2 activity. Identification of the main neurotoxic fractions following HPLC are shown.

25 **Groth Marnat G, Leslie S, Renneker M.**

Tobacco control in a traditional Fijian village: indigenous methods of smoking cessation and relapse prevention.

Soc Sci Med 1996 Aug;43(4):473-477.

This case study outlines the unique process by which a village in Fiji (N = 238) developed and implemented an extremely successful community-based smoking cessation program. Both Western smoking cessation methods and native traditional rituals were used. Specific strategies included a group pledge, village rapid inhalation ceremony, social contracting through notices and media, and a tabu formalized through a kava ceremony. Whereas the more conventional, external, health professional oriented approaches were largely unsuccessful, longer-term collaborative and village empowerment methods proved most successful. Eventually all persons in the village who smoked were able to give up smoking, with specific exceptions (elders, visitors, etc.) and became nationally known as the village that gave up smoking. Follow-up evaluation at 9 and 21 months indicated sustained success. Cases of relapse are described involving supernatural

consequences remedied by group and ceremonial methods. The socio-cultural context and larger relationship issues are discussed in order to more fully understand the effectiveness of the program.

26 **Harding RM, Fullerton SM, Griffiths RC, Clegg JB.**

A gene tree for beta-globin sequences from Melanesia.

J Mol Evol 1997;44(Suppl 1):S133-S138.

We have analyzed allelic sequence variation in sixty-one 3-kb beta-globin sequences from the Melanesian population of Vanuatu to demonstrate the value of (1) turning to the autosomal nuclear genome for studies on the evolution of modern humans and (2) using new analytical methods based on a coalescent model. After excluding recombination events, beta-globin sequence variants were connected in a unique gene tree. A gene tree provides more information for inferences on the population genealogy than simple summary statistics such as the average pairwise sequence difference. Estimates of the time to the most recent common ancestor (MRCA) and of the ages of each mutation, conditional on the gene tree, were made using new maximum likelihood methods assuming a coalescent model. We found that allelic beta-globin variation coalesces to a single shared ancestral haplotype over a time scale of approximately 900,000 years. Three major haplotypes (A1, B1, C3) that are older than 200,000 years identify ancestral diversity contemporaneous with the single MRCA for mitochondrial variation.

27 **Hess FI, Iannuzzi A, Leafasia J, Cowdrey D, Nothdurft HD, Von Sonnenburg F, Loscher T, Rieckmann KH.**

Risk factors of chloroquine resistance in *Plasmodium falciparum* malaria.

Acta Trop 1996 Aug;61(4):293-306.

OBJECTIVE: To identify patient-related risk factors of chloroquine resistance. DESIGN: A case control study. SUBJECTS: *Plasmodium falciparum*-infected school children were followed prospectively for 7 days for the detection of chloroquine resistance. Cases were 38 individuals with chloroquine-resistant infections. Controls were 125 individuals with chloroquine-sensitive infections. Cases were compared with controls with respect to previous or current study factor levels. Subjects were recruited from randomly selected schools which were stratified for area. Study location was in North Guadalcanal, Solomon Islands. OUTCOME MEASURE: Treatment failure of chloroquine in standard dosage (25 mg/kg). Follow-up period was 7 days. RESULTS: Logistic regression resulted in 5 independent significant predictors of chloroquine resistance, obtained simultaneously with the diagnosis of malarial infection: (i) Young age (odds ratio (OR) for age < 7 years: 7.1; 95% confidence interval (CI): 2.5-25.0; OR per year increase after the age of 5 years: 0.8; 95% CI: 0.6-0.9). (ii) High parasite density (OR for > 1000/ microliter: 5.0; 95% CI: 2.0-10.6; OR per 500 parasites/ microliter increase: 1.3).

28 **Hii JL, Smith T, Mai A, Mellor S, Lewis D, Alexander N, Alpers MP.**

Spatial and temporal variation in abundance of *Anopheles* (Diptera:Culicidae) in a malaria-endemic area in Papua New Guinea.

J Med Entomol 1997 Mar;34(2):193-205.

Abundance of anophelines in 10 villages in the Wosera area of Papua New Guinea was monitored during 1990-1993. Of 85,197 anophelines collected in 1,276 paired indoor and outdoor landing catches, 40.4% were *Anopheles koliensis* Owen, 36.7% *An. punctulatus* Donitz, 14.3% *An. karwari* (James), 4.9% *An. farauti* s.l. Laveran, 3.1% *An. longirostris* Brug, and 0.7% *An. bancroftii* Giles. Maps of average indoor biting rates were produced using a Bayesian conditional autoregressive model which allowed for heterogeneities in sampling effort over time and space. Differences in spatial distributions among species were observed among and within villages and were related to the distribution of larval habitats and vegetation. Abundance of *An. punctulatus* and *An. koliensis* decreased with distance from the main waterway and probably from a sago swamp forest at 6 villages in North Wosera. Abundance of *An. punctulatus* was associated negatively with those of *An. farauti* s.l., *An. longirostris* and *An. bancroftii*. The latter 3 species also had relatively low ratios of indoor-to-outdoor biting rates, and earlier biting times than *An. punctulatus*. Human blood indices of at least 0.79 were observed for all species except *An. bancroftii*. Abundance of all 6 species was correlated temporally with recent rainfall, but *An. koliensis*, *An. karwari* and *An. longirostris* showed greater temporal variability than the other species. *An. punctulatus* and *An. koliensis* tended to occur together in time and space (index of association, $I = 0.85$). Weaker associations were seen between *An. farauti* s.l. and *An. longirostris* ($I = 0.44$) and *An. koliensis* and *An. karwari* ($I = 0.34$). The most frequently collected species occurred together and were concentrated near the Amugu River; the remaining species tended to occur together but in different parts of the Wosera area. The importance of understanding ecological requirements of the different *Anopheles* vectors and their association with key household and landscape features are discussed in relation to malaria transmission and control.

29 **Hodge AM, Dowse GK, Erasmus RT, Spark RA, Nathaniel K, Zimmet PZ, Alpers MP.**

Serum lipids and modernization in coastal and highland Papua New Guinea.

Am J Epidemiol 1996 Dec 15;144(12):1129-1142.

Previous studies in Melanesians of Papua New Guinea have documented low serum cholesterol concentrations with no age-related rise and a virtual absence of coronary heart disease. However, because of recent reports of the emergence of coronary heart disease in this population, serum lipid concentrations in adults aged ≥ 25 years in three coastal ($n = 1,489$) and three highland ($n = 388$) village communities at different stages of modernization were examined as part of a survey undertaken in 1991. Total

cholesterol concentrations were clearly higher than were levels recorded in earlier studies. Moreover, age-related increases in total cholesterol, low density lipoprotein cholesterol (LDL cholesterol), high density lipoprotein cholesterol (HDL cholesterol), and triglycerides (in women) were apparent. Mean total cholesterol levels in an urban community with a high risk of diabetes were similar to those observed in Australians, while HDL cholesterol concentrations were lower. Total cholesterol and LDL cholesterol levels were higher in urban coastal and periurban highland subjects than in their rural counterparts. Prevalence of hypercholesterolemia (≥ 5.2 mmol/liter) varied from 16% in rural highlanders to 56% in urban coastal subjects. Sex, age, village, body mass index, fat distribution, glucose intolerance, physical activity, and an index of relative modernity all contributed to variations in cholesterol and triglyceride concentrations. These results show that Papua New Guineans are by no means protected from dyslipidemia and serve warning that, unless effective preventative strategies can be developed, this and similar rapidly developing populations can expect an increasing incidence of coronary heart disease.

30 **Hudson BJ, Parsons GA.**

Giant millipede 'burns' and the eye.

Trans R Soc Trop Med Hyg 1997 Mar-Apr; 91(2):183-185.

A retrospective review of 8 cases of millipede 'burns' (caused by *Polyconoceras* sp. [= *Salpidobolus* sp.]) of the eye and periorbital tissues seen in a specialist ophthalmology unit over 6 years at Madang General Hospital, Papua New Guinea, was conducted. Such cases comprised 0.06% of the 14,000 patients seen in the same period. All cases were seen in the rainy season. Apart from one adult, all cases were children (age range 9 months-7 years). Clinical manifestations included a 'burn' of periorbital skin (all 8 cases), marked periorbital oedema (3 cases), conjunctivitis (2 cases) and keratitis (one case). All patients recovered fully with standard topical ophthalmic therapy. Despite anecdotal reports that blindness is a likely sequela of millipede 'burns' of the eye, it did not occur in this, the only published series of the condition.

31 **Kaneko A, Kaneko O, Taleo G, Bjorkman A, Kobayakawa T.**

High frequencies of CYP2C19 mutations and poor metabolism of proguanil in Vanuatu.

Lancet 1997 Mar 29;349(9056):921-922.

32 **Kazura JW, Bockarie M, Alexander N, Perry R, Bockarie F, Dagoro H, Dimber Z, Hyun P, Alpers MP.**

Transmission intensity and its relationship to infection and disease due to *Wuchereria bancrofti* in Papua New Guinea.

J Infect Dis 1997 Jul;176(1):242-246.

This study describes the relationship between transmission intensity and infection and disease due to *Wuchereria bancrofti* in an endemic area of Papua New Guinea. The prevalence of

microfilaremia in the entire study population was 66%. Of 1892 persons examined, 6.2% and 12.3% had lymphedema of the legs and hydroceles, respectively. The prevalences of microfilaremia and clinical morbidity were lowest in persons <20 years old and increased progressively with age. Annual transmission potential and annual infective biting were monitored in five villages where *Anopheles punctulatus* and *Anopheles koliensis* are the only vectors of *W. bancrofti*. Both measures of the entomologic inoculation rate were positively associated with the village-specific microfilarial rate, mean intensity of microfilaremia, and prevalence of leg edema. These data indicate that transmission intensity is a major determinant of patent infection and morbidity rates in bancroftian filariasis.

33 **Kimura M, Tomizawa I, Takizawa Y, Ohtomo H.**

[A study of relapsed cases of vivax malaria after the standard primaquine therapy]. [Jap] *Kansenshogaku Zasshi* 1996 Oct;70(10):1086-1091.

Vivax malaria is the most frequent among imported malaria in Japan, comprising about 60% of the total cases. Usually, after the acute phase therapy, e.g. with chloroquine, patients with vivax malaria are treated with the standard course of primaquine, i.e. 15 mg base/day for 14 days, as curative therapy. Recently, however, cases of relapse of vivax malaria after this standard primaquine therapy were reported from various countries and were also encountered in Japan. This report showed that the relapse after the standard primaquine therapy occurred most frequently in the cases acquired in Papua New Guinea, followed by Indonesia and Thailand. In contrast, the relapse rate of the cases acquired in India was low. Most of the relapsed cases were successfully treated with either of the regimens 1) 30 mg/day for 7 days, 2) 2 courses of the standard primaquine therapy given 1 month apart or 3) 15 mg/day for 21 days, without noticeable side effects. It is imperative to establish the most appropriate regimen with primaquine for the curative treatment of vivax malaria contracted in the areas mentioned above.

34 **Knox M, Steel J.**

Nutritional enhancement of parasite control in small ruminant production systems in developing countries of South-East Asia and the Pacific.

Int J Parasitol 1996 Aug-Sep; 26(8-9):963-970.

Nutritional insufficiency and gastrointestinal nematode parasitism are major constraints to small ruminant production in South-East Asia and the Pacific Islands. Research on the effects of low cost supplements which supply nitrogen and essential minerals on the ability of small ruminants to resist infection is summarised. In controlled pen studies in young Merino sheep offered a low quality roughage diet of oaten chaff and essential minerals, supplementation with urea reduced the effects of parasitic infection by increasing weight gain and wool production and reducing faecal egg output and parasite burden. In Fiji, field studies have shown that supplementation with urea-molasses

blocks can result in increased live-weights of lambs at weaning, increased reproduction rates in maiden ewes and reduction in faecal egg output in grazing sheep. Additional benefits were derived from the inclusion of anthelmintic in the blocks in similar groups of sheep particularly during periods of greater susceptibility to parasites. Pen studies with young goats have shown that urea supplements alone gave no production benefits, but when accompanied by 100 g/d of cotton seed meal beneficial responses were observed. It is expected that parasite control in the small ruminant production systems of developing countries in South-East Asia and the Pacific Islands will benefit from the introduction of low cost nitrogen supplements along with anthelmintic therapy delivered strategically by molasses blocks.

35 **Laloo DG, Trevett AJ, Nwoko N, Laurenson IF, Naraqi S, Kevau I, Kemp MW, James R, Hooper L, David R, Theakston G, Warrell D.**

Electrocardiographic abnormalities in patients bitten by taipans (*Oxyuranus scutellatus canni*) and other elapid snakes in Papua New Guinea.

Trans R Soc Trop Med Hyg 1997 Jan-Feb;91(1):53-56.

Envenoming by a number of species of snake may affect the myocardium or cause electrocardiographic changes; several different mechanisms have been proposed. In a prospective study of snake bite in Papua New Guinea, electrocardiographic changes were observed in 36 of 69 patients (52%) envenomed by the taipan (*Oxyuranus scutellatus*), 2 of 6 (33%) envenomed by death adders (*Acanthophis* sp.) and one envenomed by the brown snake (*Pseudonaja textilis*). Septal T wave inversion and bradycardias, including atrioventricular block, were the commonest abnormalities. There was no haemodynamic deterioration. The cause of these changes is uncertain; only 2 of 24 patients (8.3%) with electrocardiographic changes had markedly elevated plasma concentrations of cardiac troponin T, a sensitive and specific marker of myocardial damage. This suggests that myocardial damage is uncommon following bites by these species. Electrocardiographic abnormalities are most likely to have been caused by a direct toxic effect of a venom component upon cardiac myocyte function; in taipan bites, taicatoxin, a calcium channel blocker, might be responsible.

36 **Lehmann D, Gratten M, Montgomery J.**

Susceptibility of pneumococcal carriage isolates to penicillin provides a conservative estimate of susceptibility of invasive pneumococci.

Pediatr Infect Dis J 1997 Mar;16(3):297-305.

OBJECTIVE: Because of its practical importance for public health monitoring in developing countries, we aimed to determine whether susceptibility to penicillin of pneumococci isolated from the upper respiratory tract (URT) is representative of the susceptibility of pneumococci causing pneumonia in children. **METHOD:** The serogroup distribution and minimum inhibitory concentration of penicillin for 56 and 90 isolates from blood and cerebrospinal fluid, respectively,

were compared with those of 833 pneumococcal carriage isolates from Papua New Guinean children. These included 154 and 98 strains from bacteremic and nonbacteremic hospitalized patients with pneumonia, respectively, 350 from outpatients with respiratory infections and 176 and 55, respectively, from children in a community-based study who were healthy or sick with pneumonia. RESULTS: Proportions of pneumococci intermediately resistant to penicillin were comparable in the URT and blood (60%) in 1985 through 1987 when serogroup distributions in the two sites were similar. However, penicillin resistance was higher in the URT (75%) than blood (44%) in 1980 through 1984 when the less frequently carried, less resistant serogroups (1 to 5, 7 to 12, 45 and 46) accounted for a high proportion of bacteremic strains. CONCLUSIONS: URT isolates from any group of sick or healthy children could provide a conservative estimate of antimicrobial susceptibility of invasive strains and is a practical way of monitoring susceptibility as well as evaluating the continued effectiveness of standard antibiotic therapy. If there was cause for concern, it would then be necessary to examine invasive isolates.

- 37 **Lehrman S.**
US drops patent claim to Hagahai cell line [news].
Nature 1996 Dec 12;384(6609):500.
- 38 **Liberski PP, Gajdusek DC.**
Kuru: forty years later, a historical note.
Brain Pathol 1997 Jan;7(1):555-560.
- 39 **Lindeberg S, Berntorp E, Carlsson R, Eliasson M, Marckmann P.**
Haemostatic variables in Pacific Islanders apparently free from stroke and ischaemic heart disease: the Kitava Study.
Thromb Haemost 1997 Jan;77(1):94-98.
We cross-sectionally measured plasminogen activator inhibitor-1 (PAI-1) activity, fibrinogen, factor VII (FVII:C) and VIII (FVIII:C) coagulant activity, and von Willebrand factor antigen (VWF:Ag) in 162 traditional horticulturalists older than 40 years from the tropical island of Kitava, Papua New Guinea, where the intake of western food is negligible and where stroke and ischaemic heart disease appear to be absent. Identical analyses were made in Swedish subjects of comparable ages. Kitavans had markedly lower PAI-1 activity, with 85% of males and 100% of females having PAI-1 activity ≤ 5 U/ml, as compared with 22 and 14% in Swedish males and females ($p < 0.0001$). Surprisingly, Kitavans also had higher FVII:C, FVIII:C and VWF:Ag. Fibrinogen was 10% lower in Kitavan males while 25% higher in Kitavan females. The very low PAI-1 activity in Kitavans may explain some of their apparent freedom from cardiovascular disease and probably relates to their extreme leanness.
- 40 **Lindeberg S, Nilsson Ehle P, Vessby B.**
Lipoprotein composition and serum cholesterol ester fatty acids in nonwesternized Melanesians.
Lipids 1996 Feb;31(2):153-158.

In this study, the relationships between dietary fat [as measured by serum cholesterol ester fatty acids (CE-FA)], age, smoking, body mass index and serum lipids were analyzed in 151 subsistence horticulturalists, aged 20-86 years, from Kitava, Trobriand Islands, Papua New Guinea. Their diet consists of tubers, fruit, coconut, fish and vegetables with a negligible influence of western food and alcohol. Total fat intake is low [21% of energy (en%)], while saturated fat intake from coconuts is high (17 en%, mainly lauric and myristic acid). In multivariate analysis, 11-43% of the variation of the serum lipoprotein composition was explained by CE-FA, age and smoking habits. The proportion of CE20:5n-3 explained much of the variation of triglycerides (TG, negative relation) and high density lipoprotein-cholesterol (HDL-C, positive) in both sexes and serum apolipoprotein A1 (ApoA1, positive) in the males. CE16:0 was positively related to TG and negatively related to HDL-C and ApoA1 in both sexes, and in males it related negatively to total cholesterol (TC) and low density lipoprotein-cholesterol (LDL-C). In males, negative relationships were present between CE18:2n-6 and TC and between CE14:0 and serum lipoprotein(a). Smoking was independently associated with lower ApoA1 in both sexes and with lower HDL-C and higher TG, TC, LDL-C, and apolipoprotein B in males. In conclusion, marine n-3 fatty acids and linoleic acid showed the same potentially beneficial relationships with lipoproteins and apolipoproteins as in western populations. The relations of palmitic acid to serum lipids may be explained in terms of endogenous fat synthesis at a low-fat intake, rather than reflecting its relative intake.

- 41 **Little AM, Mason A, Marsh SG, Parham P.**
HLA-C typing of eleven Papua New Guineans: identification of an HLA Cw4/Cw2 hybrid allele.
Tissue Antigens 1996 Aug;48(2):113-117.
HLA-C polymorphism of 11 individuals from Papua New Guinea was studied by serology and DNA typing (SSP ARMS-PCR). To resolve certain discrepancies HLA-C alleles were cloned and sequenced. Five alleles were identified by sequencing, four of which, Cw*0304, Cw*0401, Cw*12022 and Cw*1502, have been identified previously in other populations. The fifth allele, which was found in four individuals, is a novel HLA-C allele. The new allele, called HLA-Cw*0403, is most similar to HLA-Cw*0401, differing by 10 nucleotides, 9 of which are located in the region from nucleotide 98 to 218. This region of Cw*0403 is identical to both HLA-Cw*0201 and Cw*02022. The 9 nucleotide differences between Cw*0401 and Cw*0403 result in 6 amino acid differences in the alpha 1 domain. These amino acids in Cw*0403 may contribute to the serological typing of some, but not all Cw*0403 expressing cells. The final difference between Cw*0401 and Cw*0403 is a coding substitution at nucleotide 979 in exon 5. The guanine found in Cw*0403 is identical to all HLA-C alleles except HLA-Cw*0401, which has an adenine. The Cw*0403 allele was most likely

formed by a gene conversion event between Cw*02 and Cw*04, involving a minimum of 121 to a maximum of 215 nucleotides.

42 **Lucas RE, Oberli H.**

An audit to assess the impact of a strategy to reduce inappropriate red cell transfusions at Honiara Hospital.

Trop Doct 1997 Apr;27(2):97-99.

A blood transfusion committee was established at Honiara Central Hospital (HCH), a national referral hospital for the Solomon Islands to promote a rational, safe and cost-effective blood transfusion service and to audit the use of blood particularly in the perioperative context. Following the education strategy, a 29.7% reduction in the number of units of blood crossmatched as a proportion of total admissions was achieved as well as a 30.1% reduction in the number of units transfused per 100 operations. The failure of the education strategy to increase the proportion of 'group and hold' requests confirms the need for an integrated approach between the different hospital departments involved to ensure a fully satisfactory result.

43 **Maharaj JC.**

Epidemiology of spinal cord paralysis in Fiji: 1985-1994.

Spinal Cord 1996 Sep;34(9):549-559.

This descriptive analytical ten-year (1985-1994) retrospective study assessed the pattern of spinal cord paralysis (SCP) in the Fiji Islands utilising medical rehabilitation hospital data. Fiji Islands is an archipelago of 300 islands in the south-western Pacific with a multi-ethnic population of over three quarters of a million. Rehabilitation of all SCP is provided at the Medical Rehabilitation Unit (MRU). Data was collected from medical records of new SCP (n = 140) admitted to MRU and analysed with Epi Info 5 assessing associations between cause and other variables. The incidence of new SCP admitted to the MRU was 18.7/million/year. There were 75 (53.6%) traumatic and 65 (46.4%) non-traumatic SCP. The incidence varied according to gender and ethnicity with Fijian males being at the highest (41.85) risk. Amongst traumatic SCP, 38.7% were due to falls, 25.3% motor vehicle accidents, 20% sports, 8% shallow water dive and 4% each deep sea diving and others, whereas among non-traumatic SCP, 52.3% were due to unknown causes, 32.3% infections, 9.2% neoplasms and 6.2% others. The male/female ratio was 4:1. The 16-30 year age group accounted for 35% of SCP. 31% had tetraplegia and 52.1% had complete lesions. The subset of the sample who experienced traumatic SCP were more likely to be employed, aged between 16-30 years at the time of paralysis and to have complete tetraplegia. Those who experienced incomplete paraplegia were more likely to be unemployed, aged 46-60 years and educated to primary level at the time of paralysis. There was a high proportion of complete spinal lesion when compared with other studies. The incidence of secondary complications such as pressure sores and UTI was also found to be high when compared

with other studies. The results support the view that young Fijian males are most prone to sustaining traumatic spinal cord paralysis, and that there is a high incidence of secondary preventable complications. The need for preventative measures and adequate rehabilitation are emphasised.

44 **Maitland K, Williams TN, Bennett S, Newbold CI, Peto TE, Viji J, Timothy R, Clegg JB, Weatherall DJ, Bowden DK.**

The interaction between *Plasmodium falciparum* and *P. vivax* in children on Espiritu Santo island, Vanuatu.

Trans R Soc Trop Med Hyg 1996 Nov-Dec;90(6):614-620.

Studies of the prevalence and incidence of malaria were conducted in children < 10 years old living in 10 rural villages on the island of Espiritu Santo, Vanuatu, South-West Pacific. Malaria prevalence remained stable at 30% throughout the year but the relative contributions of the 2 major species were highly dependent on season. *Plasmodium falciparum* predominated in the long wet season (November-May) and *P. vivax* in the dry season (June-October). Case definitions for malaria, derived using a multiple logistic regression method, showed that parasite densities associated with clinical disease were low; case definitions for *P. falciparum* (> 1000 parasites/microL in children > 1 year old and > 500 microL in infants) and *P. vivax* (> 500 parasites/microL at all ages) were both associated with a specificity and sensitivity of > 90%. Like prevalence data, malaria morbidity was highly seasonal; 80% of clinical *P. falciparum* infections occurred in the wet season and 66% of clinical *P. vivax* in the dry season. Mixed infections were rare. Malaria was an important cause of morbidity with children < 5 years old experiencing 1.3-3.0 episodes of clinical malaria per year and 23% of fevers being attributable to malaria in this age group. Children aged 5-9 years continued to suffer one episode of clinical malaria per year. The peak incidence of *P. vivax* malaria occurred earlier in life than the peak incidence of *P. falciparum* malaria. The possible interactions between these 2 parasite species are discussed.

45 **Martlew M, Connolly KJ.**

Human figure drawings by schooled and unschooled children in Papua New Guinea.

Child Dev 1996 Dec; 67(6):2743-2762.

Human figure drawings were collected from 287 schooled and unschooled children, aged between 10 and 15 years, living in a remote region of the Western Highlands Province of Papua New Guinea, an area with no tradition of graphic art. A classification and ordinal scoring system was devised which encompassed graphic productions ranging from scribbles to conventional competent human figure drawings. The effects of school experience on drawing, even brief and indirect experience, were found to be significant. All the children attending school drew only conventional human figures, but the whole range of drawings, scribbles, transitional forms, and conventional human figure drawings were found in the

unschooled children's attempts. Nonrepresentational scribbles and shapes were largely produced by unschooled children living in remote villages without a school, trade store, or mission. Some children appeared to be able to draw representations of the human figure without going through a scribbling stage. The material is considered in relation to other reports on drawings produced by children from societies with little or no indigenous graphic art. The results are discussed in relation to various theories on the development of drawing and representational abilities.

46 **Mori S.**

[Kuru]. [Jap]

Nippon Rinsho 1997 Apr;55(4):987-992.

Kuru, the progressive and fatal neurologic disorder which occurred exclusively among natives of the New Guinea Highlands, was reviewed. Early history of kuru investigation, epidemiology, clinical findings, pathological findings, successful transmission with chimpanzees, from unconventional virus to prion hypothesis and the similarities to "variant of Creutzfeldt-Jakob disease" were discussed in the literature. Although the incidence of kuru has markedly declined with the suppression of cannibalism, it is important from a historical perspective because it was the first human transmissible prion disease to be recognized.

47 **Pettit GR, Butler MS, Williams MD, Filiatrault MJ, Pettit RK.**

Isolation and structure of hemibastadinols 1-3 from the Papua New Guinea marine sponge *Ianthella basta*.

J Nat Prod 1996 Oct;59(10): 927-934.

Further investigation of the Bismarck Archipelago (Papua New Guinea) marine sponge *Ianthella basta* for biologically active constituents has led to the isolation of hemibastadins 1 (2), 2 (3), and 3 (4) and the new brominated tyrosine derivatives hemibastadinols 1-3 (9, 13 and 14). Isolation and structure elucidation of the monomethyl ether derivatives (7 and 8) of hemibastadins 1 and 2 and the 3-bromotyramine amide of oxalic acid amide (1a) concluded our chemical investigation of *I. basta*. The hemibastadins and hemibastadinols represent important biosynthetic links to a series of bromotyrosine tetramers collectively known as the bastadins. The antimicrobial activity of the bastadins, hemibastadins and hemibastadinols is summarized.

48 **Pridmore S, Lawler A, Couper D.**

Hanging and poisoning autopsies in Fiji.

Aust NZ J Psychiatry 1996 Oct;30(5):685-687.

OBJECTIVE: Fiji is a Pacific nation with roughly equal numbers of indigenous Fijians and Indians. Previous studies, using police and medical records, have suggested significant racial, regional, age and gender differences in suicidal behaviour. The objective of the present study is to use a unique data set (autopsy reports) in the evaluation of earlier reports and to identify groups at greater

risk. METHOD: Hanging and poisoning autopsy reports from two distinct regions were examined. RESULTS: The rate of autopsy (per 100000 population per year) among Indians (19.5) is significantly greater ($p < 0.0001$) than among Fijians (1.53). In the north, among the Indians, there are more autopsies in females (21.2) than males (16.8), and hanging constitutes 85% of total suicides, while in the Central and Eastern Divisions hanging constitutes only 58% of the total. These are regional influences. Among Fijians, the rates of hanging autopsy are significantly greater ($p < 0.001$) in males (1.98) than females (0.40); however, among Indians there is no significant difference. This is a racial difference. Hanging remains the preferred option for all groups. The mean age at autopsy is 31.7. There is no significant difference between the mean ages of the races, the sexes or the regions. There is no significant difference between the mean age of poisoning (31.5) and hanging (31.8). CONCLUSION: There is a significant racial difference in rates of suicide but the influences of region, age and method are relatively slight.

49 **Rao S, Erasmus RT.**

A pilot study on plasma fatty acids in poorly controlled non-insulin-dependent (type 2) Melanesian diabetics.

Cent Afr J Med 1996 Oct;42(10):295-297.

Different data have been reported with respect to the distribution of plasma and tissue fatty acids in patients with diabetes mellitus and some studies have suggested that severe diabetes is required to produce the fatty acid abnormalities observed in the diabetic rat. We studied the plasma fatty acid profile with particular attention to the omega three and six fatty acids in 14 non-insulin-dependent (NIDDM) Melanesian diabetics the majority of whom were poorly controlled (mean glycosylated haemoglobin levels of 12.89pc); their mean age was 43.0 \pm 6.3 with a duration of 5.2 \pm 4.8 years. Plasma fatty acids were estimated by gas chromatography (GC) using a flame ionization detector (FID). Each diabetic was age and sex matched with a non-diabetic healthy control. Though the plasma concentrations of arachidonic (20:4, ω -6), eicosapentanoic (20:5, ω -3) and docosahexaenoic (22:6, ω -3) acids were lower than in control subjects, these values were of no significant difference. Similarly, no significant differences were observed between the total plasma saturated fatty acids (palmitic and stearic acids) of diabetic and control subjects. The results of this pilot study suggest that poor metabolic control may not be associated with plasma fatty acid abnormalities in NIDDM patients.

50 **Rao S, Erasmus RT.**

Pilot study on plasma fatty acids in poorly controlled non-insulin-dependent diabetic Melanesians.

East Afr Med J 1996 Dec;73(12):816-818.

Different data have been reported with respect to the distribution of plasma and tissue fatty acids in patients with diabetes mellitus and some studies have suggested that severe diabetes is required to

- produce the fatty acid abnormalities observed in the diabetic rat. We studied the plasma fatty acid profile with particular attention to the omega 3 and 6 fatty acids in 14 non-insulin-dependent (NIDDM) diabetic Melanesians, the majority of whom were poorly controlled (mean glycosylated haemoglobin levels of 12.8%); their mean age was 43.0 ± 6.3 with disease duration of 5.2 ± 4.8 years. Plasma fatty acids were estimated by gas chromatography (GC) using a flame ionisation detector (FID). Each diabetic was age and sex matched with a non-diabetic, healthy control. Though the plasma concentrations of arachidonic (20:4, omega-6), eicosapentanoic (20:5 omega-3) and docosahexaenoic (22:6 omega-3) acids were lower than in control subjects, these values were of no significant difference. Similarly, no significant differences were observed between the total plasma saturated fatty acids (palmitic and stearic acids) of diabetic and control subjects. The results of this pilot study suggest that poor metabolic control may not be associated with plasma fatty acid abnormalities in NIDDM patients.
- 51 **Ruffolo DC.**
Trauma nursing in the bush country of Papua New Guinea.
Int J Trauma Nurs 1995 Jul-Sep;1(3):61.
- 52 **Ruffolo DC.**
Trauma in developing countries, a personal experience in Papua New Guinea.
Int J Trauma Nurs 1997 Jan-Mar;3(1):4-12.
Trauma is a serious threat in developing countries. Prevention efforts, which have been so effective in other countries in controlling the incidence of injuries, are almost nonexistent. The lifestyles make the population prone to injury and tribal cultures may practice rituals that create personal injury. Developing nations lack adequate health care services for a large section of the population. A trauma nurse who visited Papua New Guinea describes her experience with living and working in various health care settings.
- 53 **Ruffolo DC.**
An ethical dilemma in the highlands of Papua New Guinea.
Nurs Ethics 1997 Mar;4(2):161-163, discussion 163-166.
- 54 **Saeki K, Fujimoto M, Kolinjim D, Tatsukawa R.**
Mercury concentrations in hair from populations in Wau-Bulolo area, Papua New Guinea.
Arch Environ Contam Toxicol 1996 Mar;30(3):412-417.
Total mercury (Hg) concentrations were determined in scalp hair from the populations in the Wau-Bulolo area, eastern Papua New Guinea (PNG), where humans are exposed to large quantities of Hg through gold-mining activities by Hg amalgamation processes. Humans living upstream and not engaged in gold mining had a mean hair Hg concentration of 0.55 microg/g (range: 0.19-1.1 microg/g) (n = 80), which was recognized as the background level in this area. In contrast, the populations involved in gold-mining activities had a significantly higher level of hair Hg (mean: 1.2 microg/g, range: 0.39-3.0 microg/g) (n = 86) than the background level, indicating direct or indirect exposure to Hg from gold mining. The hair Hg level in populations downstream of the gold-mining area was significantly higher than the background level, due to the consumption of Hg-contaminated fish. Mercury concentrations were significantly higher in males than in females, regardless of location properties.
- 55 **San Sebastian M, Goicolea I.**
Case management quality assessment in rural areas of Papua New Guinea. Letter.
Trop Doct 1996 Oct; 26(4):200.
- 56 **Scully AM.**
Fiji health promotion and innovation.
Aust Nurs J 1996 Oct;4(4):20.
- 57 **Seaton RA, Naraqi S, Wembri JP, Warrell DA.**
Cell-mediated immunity in HIV seronegative patients recovered from *Cryptococcus neoformans* var. *gattii* meningitis.
J Med Vet Mycol 1997 Jan-Feb; 35(1):7-11.
Cell-mediated immunity was assessed in 37 HIV seronegative healthy patients cured of *Cryptococcus neoformans* var. *gattii* meningitis and compared with matched controls using a multitest device which simultaneously injects seven standardized common antigens intradermally. Responses in patients and controls were similar: however, male patients had significantly higher compound (average) scores than controls (p = 0.041). Male scores were higher than female scores in both patient (p = 0.002) and control (p = 0.017) groups. In eight patients with acute cryptococcal meningitis, seven were anergic to challenge with 5 IU of tuberculin on admission. Two of these patients had positive reactions after treatment. Three of four patients tested prior to treatment with the multitest device were anergic to all seven antigens but all three survivors showed improved responsiveness following cure. These data suggest that patients are immunosuppressed on presentation (due to overwhelming var. *gattii* infection) but that following cure, cell-mediated immunity improves to its premorbid state. A transient state of immunosuppression prior to the development of the disease cannot be excluded.
- 58 **Seaton RA, Verma N, Naraqi S, Wembri JP, Warrell DA.**
Visual loss in immunocompetent patients with *Cryptococcus neoformans* var. *gattii* meningitis.
Trans R Soc Trop Med Hyg 1997 Jan-Feb;91(1):44-49.
In Papua New Guinea cryptococcal meningitis occurs predominantly in immunocompetent patients, in whom *Cryptococcus neoformans* var. *gattii* is implicated in 95% of cases. Ocular complications are common. We have reviewed ophthalmic findings in 82 immunocompetent patients and have attempted to identify those features of the disease that predict an unfavourable visual outcome. Visual loss occurred in 52.6% of

survivors and was associated with optic atrophy following optic disc swelling in 60.9%. Progression of disc swelling to optic atrophy was predicted by the presence of an abducens palsy ($p = 0.049$) and cerebrospinal fluid (CSF) cryptococcal antigen titres > 1024 ($p = 0.036$). Raised intracranial pressure (defined as opening CSF pressure ≥ 300 mm on admission) was not associated with visual loss. Vision deteriorated in 17.3% of patients despite anticytotoxic therapy and in 3.7% it followed curative therapy. The high rate of visual loss in immunocompetent patients with *C. neoformans* var. *gattii* infection contrasts with others' experience of immunosuppressed patients with *C. neoformans* var. *neoformans* infection, in whom visual loss was rare. This difference may reflect immune-mediated optic nerve dysfunction in *C. neoformans* var. *gattii* meningitis caused by either compression due to arachnoid adhesions or oedema and inflammatory cell-mediated damage.

59 **Seaton RA, Verma N, Naraqi S, Wembri JP, Warrell DA.**

The effect of corticosteroids on visual loss in *Cryptococcus neoformans* var. *gattii* meningitis. *Trans R Soc Trop Med Hyg* 1997 Jan-Feb;91(1): 50-52.

In Papua New Guinea visual loss is a frequent sequel to *Cryptococcus neoformans* var. *gattii* meningitis in immunocompetent patients. We have previously postulated that visual loss may occur as a result of the immunological response to infection around the optic nerve. This retrospective study set out to explore the effect of corticosteroids on visual outcome. Sixteen patients received varying doses of corticosteroid (mainly 100-250 mg of hydrocortisone daily for the prevention of febrile reactions to amphotericin) and 10 received anticytotoxic therapy alone. Visual deterioration occurred less frequently in those treated with corticosteroids (2/16 [12.5%] vs. 7/10 [70%], $p = 0.007$), blindness was less frequent (1/16 [5.3%] vs. 5/10 [50%], $p = 0.018$), and in 3 patients vision improved. Corticosteroids may have a role in preventing or halting visual loss in *C. neoformans* var. *gattii* meningitis in immunocompetent patients.

60 **Seaton RA, Wembri JP, Armstrong P, Ombiga J, Naraqi S, Kevau I.**

Symptomatic human immunodeficiency virus (HIV) infection in Papua New Guinea. *Aust NZ J Med* 1996 Dec;26(6):783-788.

BACKGROUND: Human Immunodeficiency Virus (HIV) infection was first detected in Papua New Guinea (PNG) in 1987. By August 1995 a total of 323 persons had been diagnosed as HIV antibody positive nationwide and seroprevalence rates were climbing. This study was prompted by a lack of data on the clinical syndromes associated with HIV infection in Melanesian adults. **AIMS:** To describe the clinical and epidemiological features of symptomatic HIV infection in adult Melanesians. **METHODS:** A largely retrospective study of patients admitted to the medical wards of the Port Moresby General Hospital between

January 1990 and September 1995. Clinical records of patients with antibody to HIV were studied and clinical, laboratory and epidemiological data were recorded. **RESULTS:** Seventy patients were studied and the majority were young, urban-dwelling adults from a variety of social groups. The sex distribution was even. Common clinical syndromes associated with HIV infection were chronic diarrhoea (47.8%), wasting (94.2%) and oropharyngeal candidiasis (68.7%). Tuberculosis was suspected in 68.6% and cryptococcal meningitis was detected in 8.6% including one patient with *Cryptococcus neoformans* var. *gattii* infection. There was a high mortality (53%) in patients admitted to hospital. **CONCLUSIONS:** Patients with HIV infection in PNG present to hospital late in their disease course. Clinical syndromes are similar to those observed in Africa and mortality on first admission is high. The major mode of transmission is heterosexual and sexually transmitted diseases and promiscuity are probably important factors in facilitating spread.

61 **Stiller CA, Parkin DM.**

Geographic and ethnic variations in the incidence of childhood cancer.

Br Med Bull 1996 Oct;52(4):682-703.

The total incidence of childhood cancer varies rather little between different regions of the world, with cumulative risk to age 15 nearly always in the range 1.0-2.5 per thousand. Acute lymphoblastic leukaemia, especially in early childhood, is most common in populations of high socio-economic status and is the most frequent childhood cancer in all industrialised countries. The risk of Burkitt's lymphoma is highest in tropical Africa and Papua New Guinea; it is strongly associated with Epstein-Barr virus infection and intense immune stimulation by malaria. Other lymphomas are also relatively common in developing countries. Non-heritable retinoblastoma has a higher incidence among less affluent populations, suggesting an association with poor living conditions and maybe an infectious aetiology. In contrast, the incidence of Wilms' tumour and Ewing's sarcoma varies largely on ethnic lines, indicating a strong role for genetic predisposition. Much of the variation in recorded incidence of brain tumours and neuroblastoma may be due to varying levels of case ascertainment. Recently the incidence of childhood Kaposi's sarcoma has risen substantially in parts of Africa severely affected by the AIDS epidemic.

62 **Stowers A, Taylor D, Prescott N, Cheng Q, Cooper J, Saul A.**

Assessment of the humoral immune response against *Plasmodium falciparum* rhoptry-associated proteins 1 and 2.

Infect Immun 1997 Jun;65(6):2329-2338.

Naturally occurring antibody responses to *Plasmodium falciparum* rhoptry-associated proteins 1 and 2 (RAP-1 and RAP-2) were measured with recombinant and parasite-derived forms of the antigens. For comparative purposes, responses to multiple forms of three other malarial antigens were also examined. The sera of 100

Papua New Guineans were screened for antibodies. 86% and 82% of individuals over 30 years of age had antibodies that recognized parasite-derived RAP-1 and RAP-2, respectively. Importantly, we found that recombinant and native antigens share linear epitopes seen by the human immune system; thus, the recombinant proteins may be adequate human immunogens. However, antibodies affinity purified on recombinant RAP-1 reacted with other antigens in addition to parasite-derived RAP-1. Thus, the antigenicity of RAP-1 may have been overestimated previously. The recognition of RAP-1 and RAP-2 correlated with age and with the recognition of recombinant forms of the ring-infected erythrocyte surface antigen, merozoite surface protein 1, and merozoite surface antigen 2 (MSA2) antigens. Antibodies to these antigens appear to be generated in response to the total exposure to malaria of the host. Antibodies to conserved regions of MSA2 had stronger correlations with both age and the recognition of other antigens than did the full-length recombinant MSA2 molecule. In contrast to results with the other antigens, there was no significant difference in the ages of individuals with a certain antibody titer to the full-length recombinant or parasite-derived MSA2 molecule, but antibodies to these two antigens did correlate with parasitemia. For all antigens tested, antibody levels after two infections can approach the peak levels of antibodies obtained in immune individuals.

63 **Sueblinvong T, Chutmongkonkul M, Seesod N, Thaithong S.**

The variation of Pf155/RESA gene in field isolates of *Plasmodium falciparum* from Thailand. *J Med Assoc Thai* 1996 Dec;79(Suppl 1):S40-S48.

Pf155/RESA, an antigen found on the surface of *Plasmodium falciparum* red blood cell membrane was once a proposed malarial vaccine candidate. The complete sequence of Pf155/RESA gene from one strain and partial sequence from two other isolates revealed that the gene is well conserved. But polymorphism of other antigenic encoded regions occurs with high frequency among isolates especially those collected from the field. Using solid phase sequencing technique, the nested PCR products of upstream 3' repeated region of exon 2 RESA gene were studied in 150 *P. falciparum* isolates, of which 117 isolates were directly collected from the field and sequenced. Other samples studied include cryopreserved clones of previously cultured isolates. The resulting sequences are compared with previously existing data of F32 (Tanzania) and FC27 (Papua New Guinea) designated as allelic type I and II respectively. Sequence analysis of the 150 *P. falciparum* showed that the amplified region of RESA gene was highly variable with substitution ranging from one to six bases and these allelic variables can be divided into 10 types. The frequency of type I (F32) occurrence is 70.86 percent, type III 13.38 per cent and 0.78 percent to 5.51 per cent for others. As a result of allelic polymorphism, the amino acid sequence is highly variable and this may cause Pf155/RESA to be an inefficient antigen.

64 **Su YP, Ferraro KF.**

Social relations and health assessments among older people: do the effects of integration and social contributions vary cross culturally?

J Gerontol B Psychol Sci Soc Sci 1997 Jan;52(1):S27-S36.

Research on health assessments has shown the importance of social relations as a factor influencing health, especially among older people. Drawing upon sociological theories of social integration and social exchange, this research examines two domains of social relations which are expected to influence assessed health. In addition, the study uses a cross-national sample (N = 3,407) of noninstitutionalized older people from the Republic of Korea, Fiji, Malaysia and the Philippines to determine if modernization conditions the relationships between social relations and health. Results indicate that social integration has a positive effect on subjective health assessments in all nations, whereas social contributions are significant only in Korea. Findings suggest that health assessments by elders in the most modernized nations appear to be much more influenced by the contributions they make to the social order than is the case in nations which are less modernized.

65 **Trejaut J, Bhatia K, Greville WD, Hu KR, Duraisamy G, Nuchprayoon C, Donald J, Aziz A, Dunkley H.**

HLA-R2 haplotypic diversity in populations of South-East Asia, northern China, Melanesia and Australian Aborigines using PCR RFLP for DRB1, DRB5, DQA1 and DQB1. A novel DRB1 allele: DRB1*16022.

Eur J Immunogenet 1996 Dec;23(6):437-449.

The polymorphism of the human leucocyte antigen HLA-DR2 and the heterogeneity of HLA-DR2 class II-related haplotypes (HLA-DRB1-DRB5-DQA1-DQB1) were investigated in four populations of East and South-East Asia (SEA) and five Melanesian populations using TaqI restriction fragment length polymorphism (RFLP) analysis, and the polymerase chain reaction (PCR) amplification-based techniques PCR-RFLP and sequence-specific oligonucleotide (SSO) typing. The haplotype DRB1*1502-DRB5*0101-DQA1*0102-DQB1*0601 was common in Malaysians, Javanese, Thursday Islanders, Madang, Goroka and the Australian Aborigines, while DRB1*16021-DRB5*0101-DQA1*0102-DQB1*0502 was common in the Thai and Thursday Islanders. DRB1*1501-DRB5*0101-DQA1*0102-DQB1*0602 was present at a high frequency in Northern Chinese, Goroka, Watut and Australian Aborigines. The study describes four rare or unusual haplotypes: HLA-DRB1*1501-DRB5*0101-DQA1*0101-DQB1*0601, DRB1*1502-DRB5*0101-DQA1*0101-DQB1*0502, DRB1*1502-DRB5*0102-DQA1*0102-DQB1*0502 and DRB1*1501-DRB5*0101-DQA1*0101/2-DQB1*0503; the latter two were confirmed by segregation in two Javanese families. A new DR2 allele, initially detected by PCR-RFLP

- and confirmed by DNA sequencing as DRB1*16022 (previously designated DRB1*16Madang), was seen in a Madang individual. A new HLA-DR2 TaqI RFLP subtype, locally designated as DR15U, is also described. This RFLP subtype segregated in a Javanese family and correlated with a typically SEA haplotype, DRB1*1502-DRB5*0102-DQA1*0101-DQB1*0501. The allele HLA-DR16Thai, determined by TaqI DRB RFLP, was found by PCR-RFLP and SSO typing to correlate with a unique SEA haplotype, HLA-DRB1*16021-DRB5*0101-DQA1*0102-DQB1*0502, and was observed in the Thai, Malaysian, Thursday Islander, Javanese and Northern Chinese populations.
- 66 **Trevett AJ, Mavo B, Warrell DA.** Tetrodotoxin poisoning from ingestion of a porcupine fish (*Diodon hystrix*) in Papua New Guinea: nerve conduction studies. *Am J Trop Med Hyg* 1997 Jan; 56(1):30-32.
Near Port Moresby in Papua New Guinea, three of four adult family members who ate a porcupine fish (*Diodon hystrix*) were severely poisoned. Within one hour of the meal, both the mother and her older daughter had developed paraesthesiae, ataxia, hypersalivation, sweating, and had collapsed and died. The younger daughter developed similar symptoms with progressive paralysis requiring mechanical ventilation for 24 hr, but she made a complete recovery 10 days after the poisoning. In this patient, nerve conduction studies showed reduced sensory and motor conduction velocities and evoked amplitudes with gradual improvement in parallel with the patient's clinical condition, consistent with the known action of tetrodotoxin on voltage-gated sodium channels.
- 67 **Turner PF, Usurup JP.** A possible case of lymphatic filariasis in a white miner in Papua New Guinea. Letter. *Med J Aust* 1997 Feb 17;166(4):223.
- 68 **Ulijaszek SJ.** Age of eruption of deciduous dentition of Anga children, Papua New Guinea. *Ann Hum Biol* 1996 Nov-Dec;23(6):495-499.
The emergence of deciduous dentition has been reported to be slower in non-Europeans than Europeans at the earlier but not later stages, and to be little affected by nutritional status. Emergence of deciduous dentition is reported for 135 young Anga children of the highland fringe of Papua New Guinea, and compared with their nutritional status as assessed by stature for age, and weight for stature. Emergence is delayed relative to European (Canadian) reference values in all but the last deciduous teeth to emerge. It is also delayed relative to other populations in Papua New Guinea for the mid-range of deciduous teeth to emerge. This later mid-range emergence may be related to the very poor nutritional status of Anga children.
- 69 **Vele DD, SenGupta SK, Dubey SP, Dokup MK.** Cystic lesions of the nasal cavity and the paranasal sinuses: report of two unusual cases. *J Laryngol Otol* 1996 Dec;110(12):1157-1160.
The clinicopathological features of two unusual cystic lesions, one arising in the nose, a calcified mucocele or a calcified retention cyst and the other in the maxillary sinus, a dentigerous cyst originating in a supernumerary tooth, are described. The literature on these two rare lesions is briefly reviewed.
- 70 **Winnett A, Thomas SJ, Brabin BJ, Bain C, Alpers MP, Moss DJ.** Familial Burkitt's lymphoma in Papua New Guinea. *Br J Cancer* 1997;75(5):757-761.
A study of Burkitt's lymphoma (BL) in Papua New Guinea for the years 1958-87 revealed four instances of familial BL. Incident cases occurred within 1 year of each other in the four families. Personal follow-up was possible for three of these families whose pedigrees showed that two or more siblings were affected. There was no significant variation of the incidence of BL by year of diagnosis or month of onset. There was significant variation in annual average incidence of BL between the three provinces studied, with the highest incidence in the Nuku and Lumi census districts (of the West Sepik Province). This is the first report of familial BL outside Africa.
- 71 **Wyatt TA.** Betel nut chewing and selected psychophysiological variables. *Psychol Rep* 1996 Oct;79(2):451-463.
28 male operators of earth movers, with an average age of 30 years, after chewing various quantities of betel nut, volunteered to participate in a laboratory study of visual choice-reaction time, digit span, eye-hand coordination, pulse rate and blood pressure. Analysis of variance identified a statistically significant increase in pulse rate only. Given no significant decrement in scores on any work-related measure discussion concerns the possible use of betel nut at the workplace and particularly as an antidote for driver's fatigue. Limitations of the study, implications of the findings, and suggestions for research are discussed.
- 72 **Yoshinaga J, Minagawa M, Suzuki T, Ohtsuka R, Kawabe T, Inaoka T, Akimichi T.** Stable carbon and nitrogen isotopic composition of diet and hair of Gidra-speaking Papuans. *Am J Phys Anthropol* 1996 May;100(1):23-34.
The carbon and nitrogen stable isotopic composition of the scalp hair and diet of Gidra-speaking people in four villages in Papua New Guinea is presented. The isotopic composition of hair was measured, while that of the diet was estimated from food consumption survey data and the measured isotopic composition and protein and carbohydrate contents of food items. The average isotopic ratios of the hair samples and of the diet varied among the four study villages, which were selected because of their diverse ecological settings. Comparison was made between hair and calculated dietary isotopic compositions. Two of the four diet-hair enrichment values obtained for ^{13}C (+1.8 and 2.2%) were similar to those previously reported (1.4-2.0%), but

the other two values (3.7 and 4.8%) were greater than in earlier reports. ^{15}N enrichment was systematically greater (by 1.0%) than reported values (4.3%) except for one village, where a much greater enrichment (6.9%) was found. The factors potentially relevant to these deviations are

discussed. Possible errors in estimating the dietary isotopic composition and minor modifications of dietary habits revealed by food consumption surveys could explain most of the discrepancies. However, the great enrichment of ^{15}N found in one of the villages remains unexplained.

Papua New Guinea Institute of Medical Research Monograph Series

ISSN 0256 2901

1. Growth and Development in New Guinea. A Study of the Bundi People of the Madang District.
L. A. Malcolm. ISBN 9980 71 000 4, 1970, 105 p.
2. Endemic Cretinism.
B.S. Hetzel and P.O.D. Pharoah, Editors. ISBN 9980 71 001 2, 1971, 133p.
3. Essays on Kuru.
R.W. Hornabrook, Editor. ISBN 9980 71 002 0 (also 0 900848 95 2), 1976, 150p.
4. The People of Murapin.
P.F. Sinnott. ISBN 9980 71 003 9 (also 0 900848 87 1), 1977, 208p.
5. A Bibliography of Medicine and Human Biology of Papua New Guinea.
R.W. Hornabrook and G.H.F. Skeldon, Editors. ISBN 9980 71 004 7, 1977, 335p. (with 1976 Supplement, 36p.)
6. Pigbel. Necrotising Enteritis in Papua New Guinea.
M.W. Davis, Editor. ISBN 9980 71 005 5, 1984, 118p.
7. Cigarette Smoking in Papua New Guinea.
D.E. Smith and M.P. Alpers, Editors. ISBN 9980 71 006 3, 1984, 83p.
8. Village Water Supplies in Papua New Guinea.
D.E. Smith and M.P. Alpers, Editors. ISBN 9980 71 007 1, 1985, 94p.
9. The Health of Women in Papua New Guinea.
Joy E. Gillett. ISBN 9980 71 008 X, 1990, 180p.
10. National Study of Sexual and Reproductive Knowledge and Behaviour in Papua New Guinea.
The National Sex and Reproduction Research Team and Carol Jenkins. ISBN 9980 71 009 8, 1994, 147p.

Monographs 1-5 are case-bound, 6-10 are paperback.

Monographs may be obtained from
The Librarian,
Papua New Guinea Institute of
Medical Research,
PO Box 60, Goroka, EHP 441,
Papua New Guinea

Cost of each Monograph (see below for Postage and Handling):

1,2.....	K 5.00
3,4.....	K 8.00
5.....	K 12.00
6,7,8,9.....	K 6.00
10.....	K 12.00

Applications for free copies of any monograph should be sent to the Director at the above address.

	Postage and Handling (PNG Kina)					
	SURFACE MAIL			AIRMAIL		
	Within PNG	Asia and Pacific	Other	Within PNG	Asia and Pacific	Other
1,2,10	1.40	1.70	6.00	1.70	4.70	9.40
3,4,5	4.00	4.50	7.00	5.00	14.10	28.20
6,7,8,9	0.70	0.85	2.50	0.85	2.35	4.70

K =PGK=Kina (1 PGK at current exchange rate = 0.5 USD approximately). Please make payment in Kina. If payment is made in any other currency, please add sufficient funds to cover all bank charges.

THE MEDICAL SOCIETY OF PAPUA NEW GUINEA

Society Membership and Journal Subscription

Membership of the Medical Society of Papua New Guinea is open to all health workers whether resident in Papua New Guinea or overseas. Members of the Society receive four issues of the Papua New Guinea Medical Journal each year. The Society organizes an annual symposium and other activities.

Membership dues are:-

Papua New Guinea residents:

Members (Medical Practitioners)-

K120 for those on expatriate contract salary

K75 for those on national salary;

Associate Members-

K40

K10 for students

Overseas residents: K120; with airmail postage of journal K130.

Remittance should be in Papua New Guinea Kina. Where this is not possible, additional funds should be added to cover all bank charges.

.....

I wish to join the Medical Society of Papua New Guinea, and enclose my membership fee of

K.....for the year(s)

Name:

Title:

Address:

.....

.....

Medical Practitioner: Yes/No (circle which applies).

If full-time student, state institution and course

being undertaken

.....

(Forward to the Membership Secretary, Medical Society of Papua New Guinea, PO Box 60, Goroka, EHP 441, Papua New Guinea)

INFORMATION FOR AUTHORS

The Papua New Guinea Medical Journal invites submission of original papers and reviews on all aspects of medicine. Priority will be given to articles and subjects relevant to the practice of medicine in Papua New Guinea and other countries in the South Pacific.

Manuscripts are accepted for publication only with the understanding that they have not been published nor submitted for publication elsewhere. All manuscripts will be reviewed and sent out for referees' comments before being accepted.

Original Articles: Reports of original and new investigations or contributions.

Brief Communications and Case Reports: Contents similar to that of original articles but text should be no more than a total of 4 Journal pages including all figures and tables.

Reviews: Critical analysis of previously collected and published information.

Letters: Short reports of clinical experience or topics of interest. Text should not exceed 1 page of the Journal.

Other types of manuscript may also be accepted for publication at the Editor's discretion.

Submitted manuscripts should conform to the instructions set out below. Manuscripts not conforming to these instructions will be returned.

MANUSCRIPTS

Submit the original and one or, preferably, two duplicates. All sections of the manuscript, including text, references, tables and legends, should be typed in double spacing. Manuscripts should not be right-justified. Each paper should include an informative Summary, Introduction, Patients/Materials and Methods, Results, Discussion and References. The title page should include the title, full names of all authors, names and addresses of institutions where the work has been done and full present address of the senior or corresponding author.

References should be kept to a minimum, and must be in the Vancouver style. Authors should check all references against the original source. Sample references are shown below.

- 3 **Garner PA, Hill G.** Brainwashing in tuberculosis management. *PNG Med J* 1985;28:291-293.

- 4 **Cochrane RG.** A critical appraisal of the present position of leprosy. In: Lincicome DP, ed. *International Review of Tropical Medicine*. New York: Academic Press, 1961:1-42.

Illustrations

Tables and figures (an original with 2 copies of each) should be prepared on separate pages. Photographs should be glossy prints, either 7 cm or 14.5 cm in width. Graphs and charts must be prepared in India ink on stiff white paper, or presented as glossy photographs. Photomicrographs should have internal scale markers. Each table should have a heading and footnotes which make it understandable without reference to the text. Each figure should have a legend; figure legends should be typed together on a separate sheet. Indicate the top of figures lightly in pencil on the back.

Abbreviations: Standard abbreviations and units should be used.

Drug Names: Generic names of drugs should be used.

Orthography: The Shorter Oxford English Dictionary is followed.

EDITORIAL MAIL

Manuscripts and other editorial communications should be forwarded to:

The Editor,
Papua New Guinea Medical Journal
PO Box 60, Goroka, EHP 441,
Papua New Guinea

SUBSCRIPTIONS AND ADVERTISEMENTS

Communications relating to advertisements or subscriptions should be addressed to the Journal as above. Matters related to the Society should be addressed to the *Medical Society of Papua New Guinea*, PO Box 6665, Boroko, NCD 111, Papua New Guinea.

Subscriptions: Members of the Medical Society of Papua New Guinea receive the Journal as part of their annual subscription. Others may subscribe at the rate of Kina 130 per annum (4 issues sent by surface mail); *with airmail postage of Journal* annual subscription is K140. (Kina 20 = approximately US\$10).

IMPORTANT: Please note that all cheques or drafts should be in Papua New Guinea Kina (PGK); if this is not possible, additional funds should be added to cover all bank charges.