Interferon beta 1b has to be self administered subcutaneously every other day. Patients run the risk of feeling that they have chronic flu³ or of becoming depressed,³ and 38% of them will have neutralised the drug by the development of antibodies after three years.³

Interferon beta 1b has no significant effect on the development of disability in multiple sclerosis.³ Quite why it has been licensed is a mystery to many of us. Why is Schering allowed to advertise it in the *BMJ*?

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- 1 IFNB Multiple Sclerosis Study Group. Interferon-beta 1b is effective in relapsing-remitting multiple sclerosis. Clinical results of a multicentre, randomised, double-blind placebo-controlled trial. *Neurology* 1993;43:655-61.
- 2 Patey DW, Li DKB, UBC MS/MRI Study Group, IFNB Multiple Sclerosis Study Group. Interferon-beta 1b is effective in relapsing-remitting multiple sclerosis. MRI analysis results of a multicentre, randomised, double-blind, placebo-controlled trial. *Neurology* 1993;43:662-7.
- 3 IFNB Multiple Sclerosis Study Group and UBC MS/MRI Analysis Group. Interferon-beta 1b and the treatment of multiple sclerosis: final outcome of a randomised controlled trial. *Neurology* 1995;45:1277-85.

Non-Hodgkin's lymphoma and solar ultraviolet radiation

Data are inconsistent

EDITOR,—Graham Bentham confirms known geographical patterns when he reports a positive association between the incidence of non-Hodgkin's lymphoma and ambient solar ultraviolet radiation in England and Wales.^{1 2} His results conflict with those from the United States, where a negative association was reported,³ further fuelling the debate over whether exposure to solar ultraviolet radiation increases the risk of non-Hodgkin's lymphoma. If there is a positive association then those people working in outdoor occupations might be expected to be at increased risk of this malignancy.

We examined the risk of non-Hodgkin's lymphoma among people judged to spend most of their working day outdoors, using one of the largest population based cancer registration datasets in the world. The data and methodology have been fully described elsewhere.⁴ Briefly, occupational information was available on 252 663 men and 119 227 women registered as having cancer in England between 1981 and 1987. Ten job groups were defined as outdoor occupations (see table 1); they accounted for a total of 17 636 registrations in men and 960 in women. Proportional registration ratios were used to estimate the relative risk of specific cancers in outdoor workers compared with workers in all occupations combined, with adjustment for age (five year age groups), social class (six classes), and cancer registry of origin (13 registries). All registrations for which the occupation was adequately described formed the standard for comparison.

Table 1 shows the risks for all cancer sites in outdoor workers by sex. In men there was a significant 19% excess of non-melanocytic skin cancer, suggesting high exposure to solar ultraviolet radiation⁵ but no excess of non-Hodgkin's lymphoma. In women the reverse was found, with a significant 56% excess of non-Hodgkin's lymphoma but no excess of non-melanocytic skin cancers. It is notable that 25 of the 27 women diagnosed as having non-Hodgkin's lymphoma were farmers and that similar observations among agricultural employees have been attributed by others to exposure to pesticides.⁶

We also examined the relation between the occupation specific risks for non-melanocytic skin cancers and non-Hodgkin's lymphoma

Table 1—Adjusted proportional registration ratios (95% confidence intervals) for outdoor workers* aged 20-74, England, 1981-7

Cancer (ICD code, 9th revision)	Men		Women	
	No Observed	Adjusted proportional registration ratio	No Observed	Adjusted proportional registration ratio
Oral cavity (141, 143-145)	130	96 (81 to 115)	6	160 (59 to 349)
Salivary (142)	22	91 (57 to 138)	0	—
Pharynx (146-148)	79	78 (62 to 98)	2	70 (9 to 255)
Oesophagus (150)	452	103 (94 to 113)	14	111 (61 to 187)
Stomach (151)	1180	96 (91 to 102)	26	89 (59 to 131)
Small intestine (152)	37	124 (88 to 172)	2	161 (20 to 584)
Colon (153)	927	95 (90 to 102)	49	103 (77 to 137)
Rectum (154)	848	103 (97 to 111)	31	117 (80 to 167)
Liver (155)	116	99 (82 to 119)	1	29 (1 to 167)
Gall bladder (156)	66	74 (58 to 95)	8	152 (66 to 300)
Pancreas (157)	591	104 (96 to 113)	21	101 (63 to 155)
Retroperitoneum (158.0)	10	78 (38 to 145)	0	—
Peritoneum (158.8-158.9)	10	80 (38 to 147)	1	234 (6 to 1307)
Nose and nasal sinuses (160)	40	111 (80 to 152)	1	70 (2 to 394)
Larynx (161)	233	95 (84 to 109)	0	—
Lung (162)	5354	98 (95 to 101)	115	101 (84 to 122)
Pleura (163)	67	69 (54 to 89)	1	61 (2 to 342)
Thymus and mediastinum (164)	22	138 (87 to 209)	2	309 (38 to 1117)
Bone (170)	32	103 (71 to 146)	2	123 (15 to 448)
Soft tissue (171)	65	93 (72 to 119)	7	207 (84 to 428)
Melanoma (172)	125	94 (79 to 113)	9	67 (31 to 128)
Non-melanocytic skin (173)	1564	119 (114 to 126)	49	88 (65 to 117)
Female breast (174)	NA	—	190	96 (84 to 112)
Male breast (175)	28	98 (65 to 142)	NA	—
Uterus (179, 181, 182)	NA	—	30	99 (67 to 143)
Cervix (180)	NA	—	37	88 (63 to 123)
In situ cervix (233.1)	NA	—	105	93 (76 to 113)
Ovary (183)	NA	—	44	99 (72 to 133)
Prostate (185)	1126	108 (102 to 115)	NA	—
Testis (186)	190	100 (86 to 115)	NA	—
Other male genital organs (187)	57	110 (84 to 144)	NA	—
Bladder (188, 189.1-189.9)	925	89 (84 to 95)	15	84 (48 to 140)
Kidney (except pelvis) (189.0)	268	88 (79 to 100)	8	98 (43 to 195)
Eye (190)	19	82 (49 to 128)	1	85 (2 to 479)
Brain and meninges (191, 192, 225, 237.5-9, 239.6)	489	104 (95 to 114)	24	113 (73 to 169)
Malignant brain (191)	373	107 (97 to 119)	11	87 (44 to 156)
Thyroid (193)	39	97 (69 to 133)	8	131 (57 to 259)
Suprarenal and other endocrine organs (194)	8	59 (26 to 118)	0	—
Ill defined and secondary (195-199)	894	94 (89 to 101)	50	112 (84 to 149)
Non-Hodgkin's lymphoma (200, 202)	401	95 (86 to 105)	27	156 (103 to 228)
Hodgkin's disease (201)	120	88 (73 to 105)	3	63 (13 to 187)
Myeloma (203)	211	112 (98 to 128)	3	42 (9 to 126)
Leukaemia (204-208)	395	105 (96 to 117)	12	85 (44 to 149)

ICD = International Classification of Diseases. NA = Not applicable.

*Outdoor workers were defined by using the Southampton occupational classification and included the following job groups (number of registrations given in parentheses): farmers (men, 8245; women, 838); foresters (men, 194; women, 6); fishing and related workers (men, 292; women, 3); scaffolders (men, 298; women, 4); bricklayers and tilers (men, 2957; women, 0); roofers and glaziers (men, 556; women, 16); builders etc (men, 3760; women, 79); rail track workers (men, 358; women, 2); road construction workers and paviours (men, 662; women, 9); mains and service layers (men, 314; women, 3).

because it is well known that exposure to solar ultraviolet radiation increases the risk of skin cancer.⁵ No linear association was observed, for either men (correlation coefficient 0.07) or women (correlation coefficient -0.02).

The aetiology of non-Hodgkin's lymphoma is poorly understood, and many factors are likely to be important. Given the inconsistencies in the data presented here and elsewhere, more detailed research is clearly required before a causal role is ascribed to solar ultraviolet radiation.

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- 1 Bentham G. Association between incidence of non-Hodgkin's lymphoma and solar ultraviolet radiation in England and Wales. *BMJ* 1996;312:1128-31. (4 May.)
- 2 Swerdlow A, dos Santos Silva I. *Atlas of cancer incidence in England and Wales 1968-85*. Oxford: Oxford University Press, 1993.
- 3 Hartge P, Devesa SS, Graumen D, Fears TR, Fraumeni JF. Non-Hodgkin's lymphoma and sunlight. *JNCI* 1996;88:298-300.
- 4 Roman E, Carpenter LM. Cancer incidence in England 1981-87. In: Registrar General. *Occupational health. Decennial supplement for England and Wales 1995*. London: HMSO, 1996:77-102.
- 5 World Health Organisation. Solar and ultraviolet radiation. *IARC Monogr Eval Carcinog Risks Hum* 1992;No 55.
- 6 Linet MS, McLaughlin JK, Walker HS, Chow WH, Weiner JA, Stone BJ, et al. Occupation and hematopoietic and lymphoproliferative malignancies among women: a linked registry study. *J Occup Med* 1994;36:1187-98.

Basal cell carcinoma may be linked to haematological malignancy

EDITOR,—Graham Bentham shows that the incidence of non-Hodgkin's lymphoma is positively associated with exposure to solar ultraviolet radiation,¹ giving insights into the previous

Table 1—Comparison of internal malignancies between patients with multiple basal cell carcinomas and controls

Malignancy	Cases	Controls
Haematological*	5	0†
Breast	3	1
Gastrointestinal tract	1	2
Genitourinary tract	4	4
Total	13	7

*Four patients had non-Hodgkin's lymphoma and one had chronic myeloid leukaemia.

†P = 0.0625, McNemar's test (StatXact Turbo statistical package).

observation of a link between non-Hodgkin's lymphoma, malignant melanoma, and squamous cell skin cancer.² He did not, however, assess any association with basal cell carcinoma, the commonest malignancy in white people.

Exposure to ultraviolet radiation is recognised as a critical factor in the pathogenesis of basal cell carcinoma, presumably partly because of resulting immune suppression.³ It could therefore be hypothesised that an association would exist between basal cell carcinoma and malignancies associated with immune suppression, such as haematological neoplasms.⁴ Importantly, many patients with basal cell carcinoma develop multiple lesions, and it might be presumed that these subjects represent a group with high susceptibility—that is, one at greatest risk of internal malignancy. We report findings from a case-control study to identify an association between multiple basal cell carcinoma and haematological malignancy.

Altogether 141 white patients from northern Europe (mean age 71; 62 women) with histologically proved primary basal cell carcinoma (range 2–35 tumours per patient) were recruited over 18 months from dermatological outpatient clinics and followed up for roughly three years. Patients with other types of skin cancer or Gorlin's syndrome were excluded. Controls matched for age and sex (one case to one control) who had benign skin conditions (benign naevi, 67; eczema, 47; leg ulcers, 10; rosacea, 7; others, 10) were recruited in the same clinics. The presence of any histologically proved internal or haematological malignancy in cases or controls was noted. Thirteen cases, compared with seven controls, had an internal malignancy (table 1). This difference was not significant, though the difference between the number of cases (5) and controls (0) with a haematological malignancy approached significance. Four of the five cases developed the haematological malignancy after developing their first basal cell carcinoma.

Our pilot study suggests a link between basal cell carcinoma and haematological malignancy. Such a link would have implications for follow up and understanding of the pathogenesis of this malignancy.

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1 Bentham G. Association between incidence of non-Hodgkin's lymphoma and solar ultraviolet radiation in England and Wales. *BMJ* 1996;312:1128–31. (4 May.)

2 Adami J, Frisch M, Yeun J, Glimelius B, Melbye M. Evidence of an association between non-Hodgkin's lymphoma and skin cancer. *BMJ* 1995;310:1491–5.

3 Kripke ML. Immunological effect of ultraviolet radiations. *J Dermatol* 1991;18:429–33.

4 Hoover R, Fraumeni JF. Risk of cancer in renal transplant recipients. *Lancet* 1973;iii:55–7.

Peanut and nut allergy

Creams and ointments containing peanut oil may lead to sensitisation

EDITOR,—Pamela W Ewan suggests that peanut allergy in children is due to the ingestion of peanut butter before the age of 1 year but acknowledges that some children react after their first known exposure.¹ She supposes that minute amounts of allergen might be present in breast milk or hidden in foods, but it is not widely appreciated that arachis oil (peanut oil) is present in many preparations that are applied topically. Breast feeding mothers often treat sore nipples with chamomile ointment, the main ingredient of which is arachis oil. Presumably some of this is ingested by the infant, which could lead to sensitisation.

Children might also become sensitised to peanut allergen through skin contact. Despite the name, zinc and castor oil ointment, which is often used to treat napkin dermatitis, is 30% peanut oil. Napkin eruptions are common in children with atopic dermatitis, and absorption of allergens is increased across broken or inflamed skin, so sensitisation to peanuts could occur in this way. Certainly, skin contact leading to sensitisation occurs with other allergens, and although no evidence exists of specific induction of peanut allergy by this route, I prefer not to recommend the use of creams or ointments that contain arachis oil.

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Baby massage oils could be a hazard

EDITOR,—The recent articles on peanut allergy do not mention the fact that baby massage is becoming popular and that the oils used in this might pose a hazard.^{1,2} If tiny babies suck their hands after a hand massage with arachis (peanut) oil they may ingest large quantities of nut products. Special care baby units such as that at Queen Charlotte's and Chelsea Hospital recommend arachis oil for massages of premature babies. Perhaps the potential risk should be indicated on the labels of massage oils and in baby massage books and at classes. Alternative products could be used.

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2 Ewan PW. Clinical study of peanut and nut allergy in 62 consecutive patients: new features and associations. *BMJ* 1996;312:1074–8. (27 April.)

Serious adverse reactions to adrenaline are becoming more likely

EDITOR,—Pamela W Ewan's findings with regard to peanut and nut allergy¹ agree with my personal experience of the problem: such allergy occurs in otherwise atopic subjects, it is acquired early (possibly in utero in some cases), and after the first adverse reaction sufferers are almost invariably aware of the problem—although in some this is at a subconscious level, and they become averse to all nuts without remembering the reason.

I doubt, however, Ewan's implication that the problem is becoming much more common. It is difficult to obtain meaningful figures of prevalence in the past, but I have estimated a probable prevalence of hypersensitivity to any nut of between 1% and 5% in the population from which my patients have been drawn over some 30 years, and without much variation. Previously, those affected knew that they could not eat nuts, avoided them assiduously, were generally free of symptoms, and did not consult a doctor, which explains the medical profession's lack of awareness of the problem in the past. Those affected were detected, if at all, when they attended allergy clinics for investigation of other manifestations of atopy. Now, on the other hand, as a consequence of publicity generated by such organisations as the Anaphylaxis Campaign and British Allergy Foundation,² many people who managed very well by themselves over many years have been informed that they must seek medical advice and be referred to clinics, where investigation confirms only what they know already.

A consequence of this is that we are seeing a true increase in serious adverse reactions to adrenaline injections, which are now being offered routinely to such patients and used for any symptoms, whether trivial or even unrelated to hypersensitivity. Parenteral adrenaline certainly plays a major part in the management of dangerous anaphylaxis and angio-oedema, but these are exceedingly rare (especially when one considers the high prevalence of sensitivity to nuts), and they probably usually involve additional, non-atopic factors. Avoidance remains the golden rule and is usually practised successfully because the patient's tongue and lips are aware of traces of the allergen in prepared foods to which the patient has been blinded. Better labelling of foods would help, but I fear that we may see more frequent dangerous episodes, including deaths, due to adrenaline than to anaphylaxis unless a more measured response to the problem is developed.

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Study was not designed to measure prevalence

EDITOR,—Media coverage of Pamela W Ewan's study of peanut and nut allergy¹—for example, in BBC Radio 4's *PM* programme—highlighted the conclusion in the abstract that "peanut and nut allergy is becoming common"; we note that in the key message this statement has become "peanut and nut allergy are becoming more common." The study, however, was not designed to measure the prevalence of such allergies and, indeed, was restricted to patients seen during one year at a particular allergy clinic; the only evidence given in support of the supposed