

reduces the tendency. Rosacea arising in patients other than women at the menopause is usually responsive to similar treatment.

Body Odour

Distress to the patient and offence to society may arise from body odour. This is very variable racially and individually and is influenced by sex, age, emotion, and by health and tone generally, as well as by diet. In the main it is dependent upon apocrine secretion and so upon sex hormones. It is the decomposition of apocrine sweat by surface organisms that is responsible for odour, so that cleanliness and care of underlinen is very important. In addition, shaving the axillae and the use of an antiseptic deodorant locally may be indicated. Hexachlorophane detergent 0.5% is of value, as is a 25% solution of aluminium chloride or a saturated solution of bicarbonate of soda (Shelley, 1953). It is doubtful if chlorophyll is a direct deodorant.

The administration of oestrogens by mouth as suggested for acne, but in larger dosage, such as stilboestrol 1 mg. daily, appears sometimes to reduce apocrine activity.

REFERENCES

- Beare, J. M., Cheeseman, E. A., Gailey, A. A. H., and Neill, D. W. (1958). *Brit. J. Derm.*, **70**, 233.
 Ingram, J. T. (1957). *Arch. Derm. Syph. (Chicago)*, **76**, 157.
 Rothman, S. (1954). *Physiology and Biochemistry of the Skin*. Chicago University Press.
 Shelley, W. B., Hurley, H. J., and Nichols, A. C. (1953). *Arch. Derm. Syph. (Chicago)*, **68**, 430.

NIGHT CALLS: THEIR FREQUENCY AND NATURE IN ONE GENERAL PRACTICE

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The night call may be described as the bugbear of general practitioners, but relatively little is known about how often night calls occur, or about their nature. Various studies of general practice have reported the number of such calls in different practices, and these estimates vary greatly.

The aims of the present study were to ascertain not only how often night calls occurred in this practice and how their frequency varied at different times of the year and days of the week, but also the reasons for patients making such calls, the doctor's diagnosis, and the action which he took.

Details of 254 consecutive night calls were recorded in a ledger in which there were columns for the date, time, period the doctor was at the call, the patient's name, address, age, and sex, the reason given by the

person putting in the call for wanting the doctor, the doctor's diagnosis, and his immediate and subsequent treatment.

The Practice

This practice is classified as semi-rural, and is situated in Penicuik, some 10 miles south of Edinburgh. There are four doctors, all principals, in the practice, and the number of patients registered with them was 9,023. Penicuik burgh had a population of 5,789 at June 30, 1956, and it is probable that the great majority of the Penicuik population were patients of this practice, as no other doctors have surgery premises there. The practice extends approximately 7 to 10 miles in each direction from Penicuik. Paper-making is the main industry in Penicuik, and the surrounding area is largely a farming community.

Frequency of Night Calls in Other Studies

Previous studies of general practice in which the number of night calls have been recorded have all been in urban areas. Brotherston and Chave (1956), studying a new housing estate, reported 70 consultations between 8 p.m. and 8 a.m. in a period of one year and related to 3,710 patients. Fry (1952) in his practice in the urban outskirts of London reported 110 visits between 8 p.m. and 7 a.m. in a year's study of his 4,456 patients. In the urban practice of 3,084 patients studied by Backett, Heady, and Evans (1954) there were 120 calls between 8 p.m. and 8 a.m. in a year. These represent annual rates of 19, 25, and 39 per 1,000 patients—a considerable variation.

Another series of figures, so far unpublished, is provided by D. McVie (personal communication), of Edinburgh. In his practice in the centre of Edinburgh he recorded an average annual rate of 84 calls between 8 p.m. and 8 a.m. per 1,000 patients, over a period of four years. This last rate is more than twice as great as that of Backett *et al.*, and more than four times that found by Brotherston and Chave.

Maternity work will account for some part of this variation but can hardly explain all of it. Over two-thirds of the calls recorded by McVie were between 8 p.m. and midnight, and the rate of calls between midnight and 8 a.m. was 25 per 1,000 patients per year. Unfortunately, comparable data are not available for the other three practices.

None of these earlier inquiries give any information about the type of call involved.

Frequency of Night Calls in this Study

In this inquiry "night" was taken to be the period from 11 p.m. to 8 a.m. The 254 calls studied occurred between November 8, 1955, and June 8, 1957, a period of 19 months. The number occurring during the calendar year 1956 was 155. This, in a practice of 9,023 gives an annual rate of 17 per 1,000 patients, but since "night" in this study is much shorter than that in the studies of Brotherston and Chave, of Fry, and of Backett *et al.*, it is not possible to compare this rate with their data. A comparison with McVie is, however, possible if calls between 11 p.m. and midnight are excluded, as he divides his calls into those before and those after midnight. The former constituted 30% of the calls in the present series, so that the annual rate for calls between midnight and 8 a.m. per 1,000 patients were 12 in this practice and 25 in that of McVie. We

have already seen, however, that his rate for 8 p.m. to 8 a.m. was between two and four times the rate in the other studies.

From the very limited amount of evidence that exists it would seem that the number of night calls in this practice is not atypical of other practices—although this is based on comparisons with urban areas only.

The proportion of nights on which there were different numbers of night calls was:

No. of Calls in a Night	Proportion of All Nights
0	65%
1	27%
2	6%
3 or more	2%

In this practice of 9,023 patients there were no calls between 11 p.m. and 8 a.m. on two thirds of the nights.

It is sometimes argued that night calls do not occur at random, but for various reasons, such as epidemics, seasons of the year, days of the week, they are clustered in such a way that there are an unexpectedly high proportion of nights with several night calls. The figures in this study do not support this argument, since the distribution of night calls is similar to a theoretical distribution calculated on the assumption that calls occur at random.* This enables us to calculate the probable number of nights with a call in a year in practices of different sizes and with different rates of night calls.

TABLE I.—Expected Annual Number of Nights with One or More Calls Between 11 p.m. and 8 a.m. in practices of Different Sizes, with Different Rates of Night Call

Size of Practice	Annual Rate of Night Calls per 1,000 Patients*		
	9	18	36
2,000	17 (5%)	34 (9%)	66 (18%)
4,000	34 (9%)	66 (18%)	119 (33%)
8,000	66 (18%)	119 (33%)	201 (55%)
16,000	119 (33%)	201 (55%)	291 (80%)

* These three correspond roughly to the rate of the present practice (18), half that rate (9), which may be similar to that found by Brotherton and Chave, and twice that rate (36), which is likely to be that found by McVie if calls between 11 p.m. and midnight were included.

A doctor in a practice of 2,000 and a relatively low rate of call may expect to be called out on only one night in 20, while a doctor doing night duty for a large practice of 16,000 may expect to be called out one night in three, in a practice with a low rate of call, and four nights out of five if the practice has a high rate. Moreover, in this last case he will expect to be called out only once on a third of the nights, twice on a quarter, and three or more times on a fifth.

Time, Day, and Season of Calls

The times the various calls were received are shown in Table II. Nearly a third of them occurred before midnight, and nearly half in the first two hours of the period. After 1 a.m. the distribution was fairly even. This early peak may be the result of patients feeling the need for a doctor's reassurance, before they settle down for the night.

TABLE II.—Times of the 254 Calls

11 p.m.—before midnight	30%
12 midnight—before 1 a.m.	15%
1 a.m.—before 2	9%
2 a.m.—	11%
3 a.m.—	7%
4 a.m.—	5%
5 a.m.—	9%
6 a.m.—	6%
7 a.m.—before 8 a.m.	8%

*This theoretical distribution is known as the Poisson, and is calculated by the formula $\frac{m^r e^{-m}}{r!}$, which gives the relative expected frequency of nights with r calls when m is the average frequency of night calls (e is the base of natural logarithms).

Night calls were fairly evenly spread on the different days of the week (Table III). There were slightly fewer than average on Sunday and more on Friday, but the difference might have occurred by chance in such a small series.

TABLE III.—Day of Week of 254 Calls

Sunday	11%	Thursday	15%
Monday	14%	Friday	17%
Tuesday	16%	Saturday	14%
Wednesday	12%	Unknown	1%

If we consider the four seasons of the year we find most consultations in winter, followed by autumn, spring, and summer:

Season	No. of Consultations
Winter: December–February*	47
Spring: March–May*	34
Summer: June–August	31
Autumn: September–November	40

* Averages based on two years' experience.

Age and Sex of Patients Making Night Calls

Unfortunately no age-and-sex analysis of the entire practice was available, but if it is assumed that the age-and-sex structure was similar to that of the population of Penicuik in 1951, certain comparisons can be made.

Of the night calls 135 were to female patients, 117 to males, and in two cases the sex of the patient was not recorded. If maternity cases are excluded as well as calls to patients for whom the sex was not recorded, 48% of the remaining night calls were to females. This may be compared with the proportion of women in the population, which was 53%. However, this difference might well arise by chance in a series of this kind, and we cannot conclude from these figures that males make relatively rather more night calls than females. There were, however, considerable differences for people in different age groups (Table IV).

TABLE IV.—Age Groups of Patients Making Night Calls Compared with Estimates for Practice Population

Age in Years	Patients Making Night Calls*	Estimate of Practice Population
Under 5	11%	10%
5–14	8%	15%
15–44	38%	43%
45–64	24%	22%
65 and over	19%	10%

* There were 23 calls for which the patient's age was not recorded, but reasons for call suggest that these people were not confined to any one age group.

Among those responsible for night calls there was a relative excess of older patients, aged 65 or more, and few schoolchildren.

Reasons Given for Asking Doctor to Call

The reasons given at the time either over the 'phone or by word of mouth for asking the doctor to call varied a great deal both in the amount of information they conveyed and in the form in which it was given.* On occasion the patient or person calling had already made the diagnosis—asthma, miscarriage—although the majority of people gave a description of symptoms which usually involved pain, such as sore ear, gasping for breath, or pain in stomach; while in a few cases the doctor was given very little indication at all of what was involved—a 'phone call by a neighbour to say a baby was very ill, or a request by a mill for a doctor's services.

*Normally the doctor received the 'phone call, but sometimes it was a caretaker.

Five groups of symptoms or conditions have been distinguished and two-thirds fell into these groups, but the remaining third cover a very wide range of statements.

TABLE V.—Reason Given by Person Making Call for Wanting the Doctor

Maternity	9%
Respiratory symptoms, pain in chest	18%
Abdominal	24%
Haemorrhage	6%
Accidents, injuries	10%
Other	33%

In a quarter of the cases abdominal symptoms such as stomach-ache, vomiting, or diarrhoea were reported. The next most frequent group, accounting for nearly a fifth of the calls, were respiratory symptoms and pains in the chest, and asthma and difficulty in breathing were the main conditions included in this group. Accidents and maternity cases each were reported in about a tenth of the cases, and different types of haemorrhage—nose bleeds, coughing up blood, etc.—in 6%. Included in the miscellaneous group are such different things as “shaking all over,” “in agony with bladder trouble,” “think he’s dead,” “taken overdose of sleeping tablets,” “think she has had heart attack,” and “the baby is delirious.”

However, these statements do not provide any reliable indication of the extent of the doctor’s knowledge about each case when he sets out to visit it. To be told on the ‘phone that Mrs. Burns has had another turn may indicate to him precisely what is involved, but it cannot be classified with any precision. On the other hand, the symptoms described on the ‘phone may be a better indication of the anxieties that cause people to call the doctor out at night than the formal diagnosis that the doctor makes when he has seen the patient.

The Doctor’s Diagnosis

The diagnoses recorded by the doctor have been classified according to the W.H.O. *International Statistical Classification of Diseases, Injuries, and Causes of Death*. The broad groups are shown in Table VI. The largest group is that of diseases and

TABLE VI.—Doctor’s Diagnosis

Broad Group	%
Infective and parasitic disease	3
Neoplasms	1
Mental, psychoneurotic, and personality disorders	5
Diseases and symptoms of the nervous system and sense organs	10
“ “ “ “ circulatory system	12
“ “ “ “ respiratory system	12
Asthma	4
Diseases and symptoms of the buccal cavity, stomach, and duodenum	8
Diseases and symptoms of the abdomen and lower gastro-intestinal system	13
Diseases and symptoms of the genito-urinary system	4
Deliveries, and complications of pregnancy, childbirth, and the puerperium	11
Accidents	12
Others	5

symptoms of the abdomen and lower gastro-intestinal system. The most frequent diagnoses in this group were appendicitis and cholecystitis, but in a number of cases the doctor only reached a symptomatic diagnosis. This group accounted for 13% of the calls. Diseases and symptoms of the respiratory system accounted for 12%, and here the most frequent diagnoses were bronchitis and acute upper respiratory infection. Arteriosclerotic and degenerative heart disease was the most common diagnosis in the group of diseases and symptoms of the circulatory system

which accounted for 12% of the calls. Accidents and maternity cases accounted for 12% and 11% respectively. Included in the group of diseases and symptoms of the nervous and sense organs were a number of vascular lesions affecting the central nervous system, and three cases of epilepsy. Ulcers of the stomach and duodenum and gastritis accounted for the majority of diseases and symptoms of the buccal cavity, stomach, and duodenum.

How far did the reason given for asking the doctor to call provide any indication of the diagnosis? This is examined in Table VII. Maternity cases and

TABLE VII.—Reasons Given for Asking Doctor to Call Compared with Doctor’s Diagnosis

Broad Group	Reason Given for Asking Doctor to Call						Total
	Maternity	Respiratory System, etc.	Abdominal Pain	Haemorrhage	Accidents	Others	
Infective and parasitic diseases	—	—	5	1	—	2	8
Neoplasms	—	1	—	—	—	2	3
Mental, psychoneurotic, and personality disorders	—	2	1	—	—	10	13
Diseases and symptoms of the nervous system and sense organs	—	2	—	1	1	20	24
Diseases and symptoms of the circulatory system	—	14	2	1	—	14	31
Diseases and symptoms of the respiratory system	—	11	3	6	—	9	29
Asthma	—	10	—	—	—	1	11
Diseases and symptoms of the buccal cavity, stomach, and duodenum	—	2	13	2	—	3	20
Diseases and symptoms of the abdomen and lower gastro-intestinal system	—	—	30	—	—	3	33
Diseases and symptoms of the genito-urinary system	—	2	7	—	—	2	11
Deliveries and complications of pregnancy, childbirth, and the puerperium	22	—	—	5	—	1	28
Accidents	—	1	1	—	23	5	30
Others	—	—	1	—	1	11	13
Total	22	45	63	16	25	83	254

accidents were the only descriptions which nearly always tallied with the doctor’s diagnosis. Chest complaints and abdominal symptoms each arose in a wide variety of diagnoses.

We have already shown that 30% of these night calls occurred in the first hour, between 11 p.m. and midnight. A relatively high proportion of calls which were diagnosed as being for either accidents or disease or symptoms of the stomach, duodenum, or buccal cavity occurred before midnight. Maternity cases were more evenly spread throughout the period: one in five was between 11 p.m. and midnight, while 12 of the 28 occurred in the two hours between 2 a.m. and 4 a.m.

An analysis by length of time of the call* shows, not unexpectedly, that maternity cases tended to take rather longer than other types of call. Over half the maternity cases took an hour or more, and one in five took two or more hours. This compares with 10% and less than 1% of the other calls.

Length of Call	%	Length of Call	%
Less than 15 minutes	4%	45-1 hour	11%
15-30 minutes	22%	1 hour-2 hours	13%
30-45 minutes	48%	2 hours or more	2%

Individuals With More Than One Call

It should be stressed here that the term “cases” has been loosely used throughout this paper simply to denote night calls, and does not refer to individuals or illnesses. In fact, 215 individuals were involved in the

*Travelling time was included in this.

254 calls. Of the 24 people with more than one call seven had two calls on a single night. The actual distribution of night calls by individuals was:

No. of Night Calls	No. of Individuals
0	8,808
1	191
2	17
3	4
4	1
5	—
6	1
7	1

Of the 9,023 patients, 24 (0.27%) were responsible for a quarter of the night calls.

It seems, therefore, worth looking at the individuals who made more than one night call and their illnesses. The individual with seven calls was a woman aged 53 with a gastric ulcer and an anxiety state, and it was acute abdominal pain which caused her to call the doctor each time, although the doctors recorded a diagnosis of anxiety state on one occasion, gastric ulcer on three occasions, and abdominal pain or pyloric spasm on three. The individual with six calls was a man of 55 with asthma, and on each occasion he had an asthmatic attack and was given an injection. The man with four calls was an epileptic, but two of his calls were for abdominal symptoms. Of the remaining persons with two or three night calls 10 were males and 11 females, and their ages, from under 1 to over 80, were as varied as their conditions.

Are Most Night Calls Necessary?

Whether a doctor is called out in the night to a patient with a particular condition will depend on many things, such as the person's tolerance of pain or discomfort, his expectation of what the doctor can do for him, and his previous experience of the condition; it is also likely to be related to his relationship with and experience of his doctor. A general practitioner who is asked whether a particular call was necessary or not will take many things into consideration; not only the danger to the patient's life and health and the need to exclude certain diagnoses, but the patient's or his relatives' need for reassurance, and also possibly whether he, the doctor, was actually asleep at the time, the distance of the journey, and the weather. Any assessment, then, is bound to be highly subjective.

Of these calls 92% were regarded by the general practitioners involved as being necessary; 6% (15) were recorded as unnecessary, and 2% were not classified.

The number of calls regarded as unnecessary is too small to make a detailed analysis useful, but all types of diagnoses were involved, similar proportions of males and females, and people of all ages. Of the 63 calls from people making more than one call in the period, three were recorded as unnecessary—a similar proportion to all the calls.

Summary and Conclusions

The 254 consecutive calls arising between 11 p.m. and 8 a.m. in a semi-rural practice of 9,000 patients are analysed. The number of such calls arising in a year per 1,000 patients falls approximately in the centre of the range of rates found in other studies. It is estimated that a doctor with a practice of 2,000 and a similar rate of night call would expect to be called out on 34 nights in a year, and his chance of being called out on any one night would be slightly less than one in ten.

Nearly a third of the calls occurred between 11 p.m. and midnight. There was little or no variation in the numbers occurring on different days of the week, but, not unexpectedly, more calls arose in the winter months and fewer in the summer.

A relatively high proportion of the calls were to elderly patients and few to schoolchildren.

Abdominal symptoms, chest complaints or respiratory symptoms, and maternity cases were the reasons given by the person putting in the calls for asking the doctor to call in half of the cases.

Only 20 calls were not regarded by the doctor concerned as being necessary. This suggests an annual rate of about two "unnecessary" night calls per 1,000 patients.

There was no evidence to suggest that either patients making "unnecessary" calls or those who made more than one call during the period tended to come from any particular age or sex group, nor were these calls confined to any one type of condition.

These results were analysed by a group of D.P.H. students, Drs. Bolt, Buchanan, Chaudhuri, Hutchinson, McLean, Penman, Robertson, Ross, Saave, Scott, Sharp, Simpson, Wallace, and Weyndling, whose assistance is gratefully acknowledged.

REFERENCES

- Backett, E. M., Heady, J. A., and Evans, J. C. G. (1954). *Brit. med. J.*, 1, 109.
 Brotherton, J. H. F., and Chave, S. P. W. (1956). *Brit. J. prev. soc. Med.*, 10, 200.
 Fry, J. (1952). *Brit. med. J.*, 2, 249.

COLLEGE OF GENERAL PRACTITIONERS SYMPOSIUM ON THE USE OF DRUGS IN GENERAL PRACTICE

Lack of knowledge of what is saved, in economic terms, by the use of drugs was deplored by the opening speakers at the College of General Practitioners' symposium on "The Use of Drugs in General Practice" on November 22. The symposium was sponsored by the Wellcome Foundation Ltd., and was held at the Wellcome Building, London. Two of the speakers were members of the Hinchliffe Committee, the third a member of the Scottish equivalent, the Douglas Committee. It was announced during the symposium that representatives of the College of General Practitioners had met representatives of the pharmaceutical industry about trials of drugs under general-practitioner as well as hospital conditions.

Hinchliffe Report

Professor C. A. KEELE, professor of pharmacology at the Middlesex Hospital Medical School, said that the drug bill was rising, as was the cost of other aspects of the Health Service as a whole. The increase in cost was related largely to proprietaries, the proportion of which to total prescribing was not, however, as high in Britain as in France (75%), Germany (85%), or Italy (90%). The Hinchliffe Committee had asked the Ministry of Health for an estimate of the savings in financial terms as a result of drugs, but information on this had not been forthcoming. Nor had this been the only occasion on which the Committee had been unable to get information from the Ministry.

About one-third of the sales of the pharmaceutical industry in this country was to the National Health Service, and one-third went in export. In the British pharmaceutical industry £4m. a year was spent on research, compared with £40m. in the United States and £7m. in Switzerland. The