

Middle Articles

Night Calls in General Practice

G. L. WEBSTER,* M.B., CH.B.; A. F. RITCHIE,* M.B., CH.B., D.P.H.;
J. A. L. MORRELL,* M.B., CH.B.; B. SCAIFE,* M.B., B.S., D.OBST.R.C.O.G.

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The telephone bell demanding attention during the night represents one of the most unwelcome but often the most rewarding sides of a family doctor's life.

Stimulated by an article by Brotherston *et al.* (1959) on the incidence of night calls, the present study seeks to compare the amount and type of night work that has occurred in our practice with other comparable studies which have appeared from time to time.

The period under review embraces four consecutive years, from 1 January 1960 to 31 December 1963. Each night call was recorded during this time, together with the age and sex of the patient, the length of time required, and the diagnosis made at the time.

The practice, which has four partners, had in its care 7,751 patients on 1 January 1960, and 8,243 patients on 31 December 1963. For the most part the patients lived in Stockton-on-Tees (population 81,274 in 1961), with a small number in Billingham-on-Tees and Thornaby-on-Tees, and therefore the vast majority were within four miles of the main surgery. The area is economically dependent on iron and steel, heavy engineering, and the chemical industry.

As the practice has developed from a panel practice it was not surprising that most of the patients tended to belong to social groups III and IV—or what Vance Packard in his book *The Status Seekers* more colourfully calls “the class of limited success.”

Frequency of Night Calls

Of late, attention has become increasingly focused on the amount and type of work carried out by the general practitioner. During the four years under review 342 calls were received between the hours of 11 p.m. and 8 a.m., representing an average rate of 10.7 calls per 1,000 per year. In a comparable study on night work in a semi-rural Scottish practice Brotherston *et al.* (1959) showed a rate of 17 calls per 1,000 patients per year. More recently Stevenson (1964), writing from his practice in Ayrshire, reported having received 182 calls between 11 p.m. and 8 a.m. during 1960. These, emanating from 5,585 patients, represent a rate of 33 per 1,000 patients, or more than three times the rate found in the present series.

Table I shows the distribution of calls per night. On 301 nights one or more calls were received, and on 1,160 no patient asked for advice or attention. This means that four out of five nights were undisturbed. However, may we be forgiven if we express the view that life would be much more tranquil if we knew when these four nights were to be.

When applied to the present figures Poisson's distribution formula shows a close relationship between the actual and the

predicted distribution, and this underlines the fact that, though there were busy nights and apparently runs of night calls, the distribution was in fact random.

TABLE I.—Proportion of Nights with Calls in Total of Four Years—1,461 Nights

No. of Calls	No. of Nights	No. of Nights as % of Total	Theoretical Distribution*
0	1,166	79.4	79.0
1	264	18.05	18.5
2	34	2.3	2.2
3	2	0.14	0.17
4	1	0.07	0.01

* Theoretical distribution according to Poisson's distribution = $\frac{m^r e^{-m}}{r!}$, where m = average frequency of calls = 342/1,461; r = No. of calls = 342; and e = Natural base logs.

Month and Season of Call

Table II shows the number of night calls received during each calendar month, and the average number of calls per 24 hours during the month when these were available. March was the busiest month with a total of 35 calls in the four years, but surprisingly, together with October, February was one of the least busy times.

TABLE II.—Distribution of Calls by Months

	1960		1961		1962		1963		Total	
	Night	Av. Calls/24 hr.	Night	Av. Cal's/24 hr.	Night	Av. Calls/24 hr.	Night	Av. Calls/24 hr.	No.	%
Jan. ..	4	10.5	6	15.5	13	17.0	10	12.6	33	9.8
Feb. ..	1	12.4	8	17.6	5	12.3	9	17.3	23	6.6
March	1	11.5	8	11.1	10	12.4	17	21.4	36	11.5
April	6	10.6	7	11.0	9		8	13.0	30	8.7
May ..	7	11.6	6	11.5	7		11	11.7	31	9.0
June ..	6	9.0	4	11.6	8		6	10.5	24	6.9
July ..	6	9.5	7	9.7	10	9.4	4	10.4	27	7.8
Aug. ..	8	8.1	10	8.0	3	9.0	10	7.5	31	9.0
Sept. ..	6	8.1	10	7.5	9	8.4	6	10.6	31	9.0
Oct. ..	7	12.5	1	9.6	9		5	10.5	22	6.6
Nov. ..	6	16.1	8	10.4	9		2	12.4	25	7.2
Dec. ..	10	14	10	15.8	2	10.9	7	11.8	29	8.4

Using the same criteria for reasons as Brotherston, we found that spring produced more night work than the other seasons, winter exactly a quarter of the total, and autumn the quietest time. Comparative figures are set out in Table III.

TABLE III.—Comparative Figures for Night Work Related to Time of Year in Two Series

	Brotherston	Present Study
Winter : December-February ..	31%	25%
Spring : March-May ..	22.5%	29.2%
Summer : June-August ..	20.5%	24.1%
Autumn : September-November ..	26%	22.7%

* General Practitioner, Stockton-on-Tees.

When the night calls are compared with the average number of calls by day the pattern of night work during the individual months does not seem to follow that established by day, further adding weight to the idea of the randomness of night work.

Time of Call

When the night calls are recorded in order of time a definite pattern becomes apparent (Table IV). An early peak during the first two hours is common to both Brotherston's and Stevenson's figures and to our own series—in all three 40% of the calls were received before 1 a.m. The reason for this must be clear to all general practitioners: anxious relatives who have coped with the patient during the evening becoming unsure of themselves and feeling unequal to the task without the doctor's reassurance or treatment. As the night progresses the number of calls declines until a fairly even distribution is reached. However, a peak does emerge towards 6-7 a.m. In our experience this late peak arose from the consideration of the patients who did not wish to disturb the doctor during the middle of the night. Again, in an industrial area it is not uncommon for at least one member of a household to be going out to work at 6 a.m. and he proves a useful messenger.

TABLE IV.—Time of Call

Time of Call	1960	1961*	1962	1963	Total	%
23.00-23.59	17	27	23	20	87	25.2
24.00-0.59	10	15	16	21	60	17.3
1.00-1.59	4	4	10	13	31	9.2
2.00-2.59	6	6	11	8	31	9.2
3.00-3.59	2	5	9	7	23	6.7
4.00-4.59	7	10	4	3	24	7.1
5.00-5.59	4	8	5	7	24	7.1
6.00-6.59	12	8	10	7	37	11.3
7.00-7.59	6	3	6	9	24	7.1

* Time of one call was not recorded.

Incidence of Calls by Sex and Age

When we compiled this section a sample of the practice was taken by considering all the patients whose surnames began with the letters B, J, and N, and taking the age and sex of each person from his or her medical card. This produced 1,153 patients from a total practice population of 8,243.

TABLE V.—Incidence of Calls by Sex

	Male	Female	Females Less Maternity
1960	17	51	32
1961	34	51	36
1962	25	69	33
1963	38	57	35
Total	114	228	136
Totals less midwifery as percentage		45.6%	54.4%
Sample of 1,153 patients		46%	54%
Total population of Stockton-on-Tees		49.5%	50.5%

As a good deal of midwifery is carried out by the practice it is not surprising that far more female patients needed treatment at night than did male patients. However, when the 92 maternity calls are subtracted from the total of female calls, the proportion of male to female visits becomes more akin to the proportion of males to females in the sample (Table V).

We can put forward no rational explanation for the apparent 8% preponderance of female patients within the practice, for in Stockton-on-Tees (Census 1961) as a whole the excess of females over males amounted to only 1%.

The distribution of night calls by decades is shown in Table VI. Included in the same table are the population distributions for Great Britain (from the Registrar-General's Returns 1960), Stockton-on-Tees (Census 1961), and the practice (taken by sample).

It is apparent at once that Stockton-on-Tees has a young population, and that within the practice this tendency was even more pronounced. Of the practice population 37% of the patients were less than 20 years old, and the children under 10 were almost numerically equal to all the patients over the age of 50 years. These rather surprising figures could be explained in terms of a high birth rate in the North-East of England (22.09 in 1962) and the fact that the area is quite definitely not one that the retired and elderly would make for by choice.

Midwifery appears to add the heaviest loading to the decade rate of calls, weighing most heavily on the third and fourth decades, and when the gross figures are considered a much higher rate of night calls emerges from the third and fourth decade than is to be expected from the proportion of patients in those decades.

A clearer overall picture is presented when the maternity calls are excluded from each decade. The picture then is of a fairly steady increase in the amount of night work produced by each decade. This can be illustrated numerically (Table VI, column 12) if the number of calls, expressed as percentages, are divided by the proportion of the practice population for each decade. In the first five decades this figure is less than unity (except when midwifery is included) and infers that less night work has been carried out than would have been expected from the proportion of the practice population in the individual decades.

From the age of 50 upwards a fairly sharp increase in the rate of night calls occurs, until at 70 years and over three times as many calls were carried out than would have been expected statistically.

In only two decades the picture of increasing night work with increasing age disrupted. The first decade produced more night work than the second, but even so the number of calls in this youngest of all and notoriously difficult age group was far smaller than their numerical proportion. Though we have no statistical evidence to support us, it was our impression that most of the calls to children under the age of 10 occurred from 6 to 10 p.m. The fifth decade produced a comparatively low rate of calls, the second lowest when midwifery is excluded. This is very difficult to explain but could be a combination of

TABLE VI.—Details by Age Group

Age	No. of Calls								Sample of 1,153 Patients %	Stockton-on-Tees Census 1961 %	Registrar-General's Returns for Great Britain 1960 %	% Calls	
	Gross				Less Maternity							% Age Group from Practice Sample	
	1960	1961*	1962	1963	Total	%	Total	%				Gross	Less Maternity
0-9	8	11	8	14	41	12.1	41	16.5	21.1	18.3	14.9	0.58	0.7
10-19	4	10	5	12	31	8.3	26	10.4	16.2	15.5	14.7	0.52	0.65
20-29	17	15	40	23	95	28.1	27	11.7	15.8	12.9	12.5	1.8	0.75
30-39	12	10	16	6	44	13.2	25	10.0	12.7	14.5	13.8	1.04	0.78
40-49	3	8	3	6	20	5.9	20	8.3	12.1	12.7	13.6	0.49	0.67
50-59	12	11	7	9	39	11.4	39	15.6	10.9	11.7	13.3	1.04	1.5
60-69	7	14	10	7	38	11.2	38	15.2	7.1	8.0	9.6	1.6	2.14
70-79	4	4	4	12	24	7.2	24	9.7	3.0	4.3	5.7	2.37	3.13
80+	1	1	1	6	9	2.6	9	3.6	1.1	1.1	1.9	2.36	3.0

the patients in this decade having reached a stage of wisdom and insight without having reached the stage where high rates of cardiovascular and degenerative disease could be expected.

Undoubtedly the unique age structure of the practice, with its preponderance of younger patients who appear to require less attention at night, is an important factor in producing such a low rate of night calls as 10.7 per 1,000 patients per year.

Length of Time Taken for Each Call

The length of time taken for each call, including that taken in travelling, shows a remarkable similarity to Brotherston's figures (Table VII). The commonest length of time lay between 30 minutes and one hour, and accounted for 58% of all the calls, while in Brotherston's series this quantum involved 59% of the calls.

TABLE VII.—Duration of Calls

	Present Study	Brotherston's Study
Telephone advice	15 (4.5%)	
Up to 30 minutes	86 (25%)	26%
Up to 1 hr.	197 (58%)	59%
Up to 2 hours	34 (10%)	13%
Up to 3 "	2 (0.6%)	} 2%
Over 3 "	1 (0.3%)	
Unrecorded	7	

TABLE VIII.—Individuals With More Than One Call

No. of calls	0	1	2	3	4
No. of subjects	7,925	303	9	3	3

Undoubtedly maternity work involved the greatest length of time, the shortest call taking up 45 minutes and the longest—a breech delivery, retained placenta, and post-partum haemorrhage—three and a half hours. The average duration of a midwifery call at night was 90 minutes.

Diagnosis

Once again maternity work accounts for the greatest number of calls—92 or 26%. Of these, 45 were to normal confinements and 16 to abortions.

The second and third most common groups, diseases of the gastro-intestinal tract and diseases of the cardiovascular system, were separated by one call. Appendicitis and symptomatic diagnosis of abdominal pain of uncertain origin were the commonest findings in the former group. Coronary thrombosis was responsible for almost half the calls to patients suffering from diseases of the cardiovascular system.

Perhaps incorrectly from a statistical standpoint calls to children up to 9 years have been classified separately, and this, the fourth commonest group, accounted for 42 calls or 12% of the total.

Comparison with Brotherston's study was difficult, first because of the different classification of disease and, second, because of the midwifery figures—26% in the present study and 11% in Brotherston's series—which tended to distort the other proportions.

Accidents, however, showed an interesting difference in the two studies, for while in Brotherston's series these gave rise to more work than the maternity service—30 calls or 12% of the whole—in our practice trauma accounted for only 1.3% of the calls. As Tees-side has its share of heavy industry and therefore of industrial accidents, we could only assume that, as the only accidents which we saw were domestic ones and minor

road casualties, this part of our night work was dealt with at the Accident Centre in Middlesbrough.

Patients Needing Attendance at Night

In the four years under consideration 318 patients required one or more visits during the night. Thus, from a total practice population of 8,243 patients less than 4% were seen at night.

Of the patients who were seen four times one was an old lady with severe coronary artery disease, while another was a notoriously inadequate personality who resolved her family disagreements by an apparent paresis of the arms.

Unnecessary Night Calls

It is difficult to be dogmatic and almost impossible to define what constitutes an unnecessary night call. Necessity depends upon so many factors: the attitude of the patient to disease and pain, the reaction of the relatives, and the relationship of each of these two groups with the family doctor.

In general three main groups of calls may be distinguished. There is the genuine medical emergency in which disease constitutes a threat to life or produces symptoms of such severity as to require swift relief. The second group is slightly more vague; the symptoms, though dramatic, are not dangerous, but they may to the layman be indistinguishable from those found in the true medical emergency. Patients in both these groups, we considered, were quite justified in asking for a visit at night. Lastly there is the unnecessary call. Where the diagnosis is obvious to both the patient and his relative and it neither constitutes a danger to life nor gives rise to intolerable discomfort, if the patient is in a position to treat himself at least temporarily, a request for a visit at night might reasonably be described as unnecessary. On this basis we received 27 unnecessary calls, or 7% of the total. This compares with 6% in Brotherston's study. The ages of patients making unnecessary calls, or on whose behalf unnecessary calls were made, varied from 5 months to 69 years, and of the 27, 16 were female and 11 were male.

Summary

In an urban practice of 8,243 patients 342 calls were received between 11 p.m. and 8 a.m. in four consecutive years. This, representing an annual rate of 10.7 per 1,000 patients, is below the rates of corresponding studies, and could be attributed to the unique age structure of the practice.

The calls appeared to follow a random pattern, and there was less seasonal variation than had been noted in another survey.

One-quarter of the calls occurred before midnight. The proportion of calls to males and females bore a close resemblance to the proportion of males to females in the practice.

There was an increase of the need for night calls with increasing age.

Unnecessary calls amounted to 7% of the total.

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REFERENCES

- Brotherston, J. H. F., Cartwright, A., Cowan, J. L., Baldwin, J. T., Douglas, E. C. K., and Steele, G. A. (1959). *Brit. med. J.*, 2, 1169.
Stevenson, J. S. K. (1964). *Ibid.*, 1, 1370.