The distribution of medical workforce on a standard on call rota does not correlate with peak times of admissions

Darren Green1,2, Gaynor White2, Vicky Daye2, Rob Nipah2, Anu Trehan2, Richard Warner2

1. Institute of Population Health, University of Manchester, UK. 2. EAU Research Faculty, Salford Royal Foundation Trust, UK.

AIMS

The distribution of medical staffing during the 24 hours of an acute medical task is generally organised arbitrarily into day and night partial shifts.

We compared the distribution of manpower with the distribution of acute medical admissions to determine whether this rota pattern optimises the use of available medical staff.

We also compared the distribution of admission across the 24 hour period between patients grouped by age and presenting illness, and compared peaks in admissions at weekends versus weekdays.

METHOD

We observed the number of medical staff available each hour during 20 consecutive weekdays. If a doctor was assigned to cover both admission and ward duties, he/ she was recorded as providing half their working hours towards admissions. We calculated the percentage of total man hours worked for each hour on the 24 hour clock and compared this with the percentage of medical admissions for the same hour.

To determine the rate of medical admissions, we evaluated all acute adult medical admissions to Salford Royal Hospital during the financial year starting 1st April 2012. Patients were excluded if admitted to a tertiary medical speciality (renal, dermatology, stroke, neurosciences, IFU).

Data were also recorded on time and day of admission, source of referral (A&E versus primary care), age, gender, and presenting illness categorised by organ system.

A qualitative comparison was made between the distribution of workforce and admissions. X² test and one way ANOVA were used to compare the pattern of admissions between groups.

RESULTS

Figure 1. The distribution of staff over the 24 hour clock.

The biggest discrepancy between admissions and man power was between 09:00-10:00 when only 2.7% of patients were admitted but 6.7% of man hours were worked (figure 2). Conversely, between 00:00-01:00, 5.6% of patients were admitted but 2.2% of man hours worked. The percentage of admissions and man hours worked were matched to within 1% from 13:00-19:59 and from 03:00-7:59, meaning that there was a mismatch between admissions and manpower for 12 of the 24 hours of a typical medical take.

Figure 2. Comparison of the peaks in medical on call manpower and patient admissions to acute medicine across the 24 hour period.

Figure 3. There was no difference in admission pattern across the 24 hours for presentations of different organ systems.

Figure 4. A&E admissions accounted for the majority of admissions. Very few patients were admitted via any other route during overnight hours. The peak in GP referred arrivals was between 5pm and 6pm.

Figure 5. At the weekend, patients aged under 40 years were equally likely to be admitted overnight as during the day (51% versus 49% respectively). During the week, the comparative figures were 40% versus 60%.

CONCLUSION

Normal on call shift patterns do not adequately tie in with the distribution of workload during an acute medical take. A wider use of evening and twilight shifts may improve the concordance between patterns of admissions and man hours being worked.

Weekend admissions in younger patients are proportionately more likely to be overnight than during the day.

CONTACT

Darren Green, Clinical Lecturer in Nephrology, Institute of Population Health, University of Manchester. Tel: 0161 206 4446 darrengreen@doctors.org.uk.