

Appendix 4: The WayWard Project and other studies

Working out of hours

We used data from the WayWard Project and from a study undertaken by the Aneurin Bevan University Health Board (ABUHB) in formulating our recommendations for staffing medical services out-of-hours. The [WayWard Project](#) – funded by The Health Foundation and based at the University of Nottingham and the Liverpool School of Tropical Medicine – has collected task, activity and staff location data for a number of years. Task data used in this report were collected as a by-product of using a wireless call handling and task management system for medical and surgical wards produced by Nervecentre Software Ltd

(<http://nervecentresoftware.com/solutions/communications/>). Clinical tasks are raised via a web interface at ward level and passed to a coordinator for triage and allocation to an appropriate out-of-hours team member. When the team member accepts the task on their smart device, it is added to their task list and remains active and visible to the coordinator and team member until it is completed or reassigned. During 2013 and 2014, a total of 327,493 tasks were logged by staff at Nottingham Queen’s Medical Centre and Nottingham City Hospital. During that time, the ten most common tasks that the out-of-hours teams in these hospitals were called to carry out are shown in Table 1.

Table 1 Categories of tasks

	Task	Frequency	Percentage of total tasks
1	Venous access and venepuncture	66,095	20%
2	Drug prescribing	57,637	18%
3	Blood test result interpretation	32,901	10%
4	Clinical review and management (Amber)	27,929	9%
5	Clinical review and management (Green)	22,948	7%
6	Prescribing intravenous fluids	22,125	7%
7	Clerking	13,581	4%
8	X-ray request or review	11,701	4%
9	Assessing a patient with an Early Warning Score >4	9,793	3%
10	Requesting a blood test	9,367	3%

These 10 tasks made up 85% of tasks out-of-hours.

Table 2 Wards generating the top ten tasks out of hours

	Site	Percentage of all tasks
Non-medical	General and orthopaedic surgical wards (including gastroenterology)	24%
	Clinical oncology and haematology wards*	17%
Specialist*	Nephrology/transplant wards*	6%
	Healthcare of older people (HCOP) wards (including stroke assessment)	15%
Medical	Respiratory medicine wards	11%
	Endocrinology and diabetes wards	6%
	Cardiology wards	6%

*Data from a major tertiary hospital

The Aneurin Bevan University Health Board study

Estimated current workload of a multidisciplinary (H@N) team on-call

A review of on-call activities of Tier 1 staff was carried out both by day and night in two hospitals at Aneurin Bevan University Health Board (ABUHB). Unfortunately, this study also lacks information about the work undertaken by the Tier 2 medical registrars on-call.

Table 3 Main types of tasks on-call – top 78% – per 100 inpatients, per 24-hour day on-call

Urgent task for on-call team	Percentage of all tasks	Number of tasks per 100 patients	Category of task
Clinical review and management	34%	18	All groups
Prescribing drugs and intravenous fluids	25%	17	Legacy
Review of blood test and X-ray results	16%	13	All groups
Venous access and venepuncture	20%	13	New and legacy

The study suggested that the time taken to carry out some of these tasks is as shown in Table 4.

Table 4 Time taken to complete on-call tasks (ABUHB data)

Urgent task for on-call team	Number of episodes (averaged)	Average time taken for each task	Average journey time between tasks	Total time taken
Clinical review and management	1,031	8 mins	2 mins	10 mins
Prescribing drugs and intravenous fluids	116	5 mins		7 mins
Review of blood test and X-ray results	209	8 mins		10 mins
Minor procedures – <i>venous access and venepuncture</i>	33	14		16 mins
Overall average	1,389	8		10

Combining data from the work of the WayWard Project and the ABUHB study clearly has some conceptual problems. However, Table 5 shows some indication of the kind of results that are produced if this is undertaken.

Table 5 Time taken to complete main categories of on-call tasks per 100 inpatients, per shift (combined ABUHB and WayWard Project data)

Period of on-call	Number of tasks per 100 inpatients	Average time taken per task	Total time taken per shift, per 100 inpatients
Weekday twilight shift 5pm to 10pm – 5 hours	12	10 mins	2.2 hours
Weekday night shift 10pm to 9am – 11 hours	13	10 mins	
Weekend night shift 10pm to 9am – 11 hours	14	10 mins	
Whole out-of-hours period 5pm to 9am – 16 hours	25	10 mins	4.2 hours

- This suggests that the actual time spent by a multidisciplinary team on-call in responding to urgent requests, for a cohort of 100 hospital inpatients of all specialties including some estimate of the time it takes to move from task to task, over a 16-hour on-call period, is in the region of 4.25 hours of continuous work.
- In our consideration of the time spent in tasks other than direct patient care, we proposed an estimate for these additional activities at 40% of the total time, adding an

extra 40 minutes to each hour of direct clinical care. Adopting the same principle here increases the time needed to 7 hours.

- However, neither the WayWard Project data nor the ABUHB study capture the work of the medical registrar on-call adequately, and respondents to the RCP Medical Registrar Survey reported that, in their opinion, over half the tasks that they undertook could have been undertaken by Tier 1 clinicians. As they also reported that their workload was excessive, it would appear that the levels of Tier 1 staffing on-call described by the WayWard Project and ABUHB studies are an under-provision and that Tier 2 medical registrars are having to ‘act down’ to make good the shortfall. This information from the Medical Registrar Survey suggests therefore that the measurements made for current levels of Tier 1 staffing out-of-hours are documenting levels of staffing that are essentially inadequate.
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Working at weekends and on public holidays

Modelling assumptions – Sandwell General Hospital

We used data from the WayWard Project and Sandwell General Hospital (SGH) when formulating our recommendations for medical ward staffing at weekends and on public holidays.

It is not practical to create ‘one-size-fits-all’ staffing recommendations for the hospital workload at the weekend. Factors that determine this will include acuity of patient illness, and different specialties that have separate teams present.

We have tried to directly measure the tasks that are undertaken by the weekend team using Nervecentre data from the WayWard Project and the estimated time needed for each task based on directly observed and timed data from ABUHB and SGH junior doctors, where directly timed data were not available. In SGH there are 200 medical ward beds in addition to the acute medical unit (AMU). The combined 75th centile for each task from the Nervecentre data with expected times per task have been combined to give direct work estimates. In total, therefore, for the weekend day there are 25.2 hours of work per 13-hour shift. At SGH, this work is shared by the two Tier 1 staff (one foundation level doctor and one core medical trainee), and 0.5 Tier 2 staff (a specialist registrar (StR)). For the weekend nights, there are 12.2 hours of work per 11-hour shift. At SGH this work is covered by two Tier 1 staff (one core medical trainee and one

nurse practitioner). No allowance has been made for walking between tasks, receiving tasks or consulting senior colleagues. These calculations have been reviewed in other general hospitals and found to be reasonable estimates of the work undertaken.

The results of the calculations made according to the task undertaken are shown in Table 6.

Table 6 Tasks per 100 patients per shift

Task	Weekend night 10pm – 9am	Weekend day 9am – 10pm	Time per task (estimate in minutes)	Weekend night Time directly involved in tasks (minutes)	Weekend day Time directly involved in tasks (minutes)
Admission/ discharge	0.14	0.89	30.00	4.2	26.70
Certification of death	0.21	0.21	10.00	2.1	2.10
Clerking	0.79	1.47	60.00	47.4	88.20
Clinical review	3.05	5.32	30.00	91.5	159.60
Discussion with relatives	0.01	0.14	20.00	0.2	2.80
Drug prescribing	4.55	11.89	10.00	45.5	118.90
Early Warning Score	2.28	3.22	30.00	68.4	96.60
Falls	0.15	0.21	15.00	2.25	3.15
Liaison with other services	0.21	0.36	30.00	6.3	10.80
None of the above	0.87	1.93	10.00	8.7	19.30
Procedure required	4.02	7.96	15.00	60.3	119.40
Sick patient to be aware of	0.55	0.62	20.00	11	12.40
Test request / review	2.6	9.39	10.00	26	93.90
Urgent response	0.01	0.02	30.00	0.3	0.60
Total	19.44	43.63		374.15 or 6.2 hours	754.45 or 12.6 hours
				11 hours in shift	13 hours in shift