

Staffing Tool Methodologies and Outputs

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Methodology A

Multiplier calculation for one patient at each level of dependency/acuity over a 24 hour period

$$WTE = WI * hmh1 * (ho / 60 * do) / dc * (1+(paa-b)) / ch$$

Where:

WTE = whole time equivalent

*WI = workload index = sum of (number of patients at each dependency/acuity level * (hourly minutes per hour for each dependency/acuity level/hourly minutes per hour for dependency/acuity level 1))*

hourly minutes per hour = the number of minutes on average per hour spent on direct care by dependency/acuity = specialty specific data from observation studies

hmh1 = hourly mins per hour for dependency/acuity level 1

ho = hours open = number of hours per day the service/ward is open

do = days open = number of days the service/ward is open

dc = direct care = percentage of time spent on direct care as a proportion of all time observed in the study

paa = predicted absence allowance = percentage to cover planned and unplanned leave, for example study leave, annual leave, maternity leave, sickness absence

b = breaks = percentage to allow for breaks/unproductive time

ch = contracted hours worked per week by 1 WTE

The results of the above formula calculates the multiplier for one patient at each level of dependency over a 24 hour period. This value is multiplied by the average number of patients, per level of care, within a staffing level tool to derive a recommended Whole Time Equivalent (rWTE).

Methodology B

Multiplier calculation for one patient at each level of acuity per episode of care

$$WTE = ((WI * dt) * hmh1 * (ho / 60 * do) / dc * (1+(paa-b)) * sm / ch$$

Where:

WTE = whole time equivalent

*WI = workload index = sum of (number of patients at each acuity level * (hourly minutes per hour for each acuity level/hourly minutes per hour for acuity level 1))*

dt = daily total = total number of average patients per day

hourly minutes per hour = the number of minutes on average per hour spent on direct care by acuity = specialty specific data from observation studies

h_{mh1} = hourly mins per hour for acuity level 1

ho = hours open = number of hours per day the service/ward is open

do = days open = number of days the service/ward is open

dc = direct care = percentage of time spent on direct care as a proportion of all time observed in the study

sm = skill mix percentage depending on whether nursing or medical

paa = predicted absence allowance = percentage to cover planned and unplanned leave, for example study leave, annual leave, maternity leave, sickness absence

b = breaks = percentage to allow for breaks/unproductive time

ch = contracted hours worked per week by 1 WTE

The results of the above formula calculates the multiplier for one patient at each level of acuity per episode of care. This value is multiplied by the total number of patients, per level of acuity to derive a recommended Whole Time Equivalent (rWTE).

Methodology B1 (skill mix removed)

Multiplier calculation for one patient at each level of acuity per episode of care

$WTE = ((WI * dt) * h_{mh1} * (ho / 60 * do) / dc * (1+(paa-b)) / ch$

Where:

WTE = whole time equivalent

*WI = workload index = sum of (number of patients at each acuity level * (hourly minutes per hour for each acuity level/hourly minutes per hour for acuity level 1))*

dt = daily total = total number of average patients per day

hourly minutes per hour = the number of minutes on average per hour spent on direct care by acuity = specialty specific data from observation studies

h_{mh1} = hourly mins per hour for acuity level 1

ho = hours open = number of hours per day the service/ward is open

do = days open = number of days the service/ward is open

dc = direct care = percentage of time spent on direct care as a proportion of all time observed in the study

paa = predicted absence allowance = percentage to cover planned and unplanned leave, for example study leave, annual leave, maternity leave, sickness absence

b = breaks = percentage to allow for breaks/unproductive time

ch = contracted hours worked per week by 1 WTE

The results of the above formula calculates the multiplier for one patient at each level of acuity over a 24 hour period. This value is multiplied by the total number of patients, per level of acuity to derive a recommended Whole Time Equivalent (rWTE).

Methodology C

Multiplier calculation for one intervention at each level of acuity

$$rWTE = WI * (dci + ici) * hmh1 * (ho / 60 * do) / (dc + ic) + tt * paa / ch$$

Where:

rWTE = recommended Whole Time Equivalent

*WI = Workload Index = sum of (number of interventions at each acuity level * (hourly minutes per hour for each level of acuity / hourly mins per hour for acuity level 1))*

dci = average number of direct care interventions at each level of care

ici = average number of indirect care interventions at each level of care

hmh1 = hourly mins per hour for dependency level 1

hmph = the number of minutes on average per hour spent on direct and indirect care by dependency

ho = hours open = number of hours per day the service is open

do = days open = number of days the service is open

dc = direct care = percentage of time spent on direct care as a proportion of all time observed in the national run

ic = indirect care = percentage of time spent on indirect care as a proportion of all time observed in the national run

tt = travel time = actual travel time in hours

paa = Predicted absence allowance = percentage to cover planned and unplanned leave, for example study leave, annual leave, maternity leave, sickness absence

ch = hours worked per week by 1 WTE

The results of the above formula calculates the multiplier for one intervention at each level of acuity. This value is multiplied by the total number of interventions, per level of acuity to derive a recommended Whole Time Equivalent (rWTE).

Methodology D

$$WTE = th * (1 + paa) / ch$$

Where:

th = sum (total task time)

paa = predicted absence allowance = percentage to cover planned and unplanned leave, for example study leave, annual leave, maternity leave, sickness absence

ch = contracted hours worked per week by 1 WTE

Methodology E

Where Additional Activity exists within a staffing level tool, this is calculated separately by the following formula:

$$rWTE = ((AA\ staff * AA\ hours) / 1WTE) * paa$$

where:

rWTE = recommended whole time equivalent

AA staff = number of staff

AA hours = number of hours of activity

paa = predicted absence allowance = percentage to cover planned and unplanned leave, for example study leave, annual leave, maternity leave, sickness absence

Methodology F

$$rWTE = ns * hpb * (1+paa) / ch$$

where:

rWTE = recommended whole time equivalent

ns = number of staff recorded

hpb = hours worked per 4 hour block = unpaid breaks removed at 15 minutes per 4 hours if <= 8 hours worked; 20 minutes per 4 hours otherwise

paa = predicted absence allowance = percentage to cover planned and unplanned leave, for example study leave, annual leave, maternity leave, sickness absence

ch = contracted hours worked per week by 1 WTE

Staffing Tool	Development methodology	Table of multipliers*	Tool guidance
Adult Inpatient Staffing Level Tool Version 4	Methodology A	Table 1	Adult inpatient tool – Healthcare Improvement Scotland
Small Wards Staffing Level Tool Version 3	Methodology A	Table 2	Small wards staffing level tool – Healthcare Improvement Scotland
Neonatal Staffing Level Tool Version 3	<p>Uses British Association of Perinatal Medicine (BAPM) standard patient ratios as multipliers</p> <p><u>Additional activity</u> Methodology E</p>	Table 3	Neonatal tool – Healthcare Improvement Scotland
SCAMPS - Scottish Children's Acuity Measurement in Paediatric Settings Version 3	<p>Methodology A</p> <p><u>Additional activity</u> Methodology E</p>	Table 4	Scottish children's acuity measurement in paediatric settings (SCAMPS) tool – Healthcare Improvement Scotland
Maternity Staffing Level Tool Version 3	<p><u>Antenatal</u> Methodology A</p> <p><u>Postnatal</u> Methodology A</p> <p><u>Labour</u> Methodology A</p> <p><u>Clinic</u> Methodology B1</p> <p><u>Community</u> Methodology B1</p> <p><u>Triage/assessment</u> Methodology B1</p> <p><u>Additional activity</u> Methodology E</p>	Table 5	Maternity – Healthcare Improvement Scotland

Mental Health and Learning Disability Staffing Level Tool Version 3	Methodology D	Table 6	Mental health and learning disability (MHL) tool – Healthcare Improvement Scotland
Community Nurse Staffing Level Tool Version 3	Methodology C	Table 7	Community nursing (CN) tool – Healthcare Improvement Scotland
Community Children’s & Children’s Specialist Nurse Staffing Level Tool Version 3	Methodology C	Table 8	Community children’s and specialist nurses tool (CCSN) – Healthcare Improvement Scotland
Clinical Nurse Specialist Staffing Level Tool Version 3 (for adults)	Methodology C	Table 9	Clinical nurse specialist (CNS) staffing level tool – Healthcare Improvement Scotland
Emergency Care Provision Staffing Level Tool Version 3	Methodology B	Table 10	Emergency care provision staffing tool – Healthcare Improvement Scotland
Professional Judgement Staffing Level Tool Version 3	Methodology F		Professional judgement tool – Healthcare Improvement Scotland

***multipliers are based on WTE of 37.5 hours and will be impacted by a change in conditioned hours**

Table 1

Adult Inpatient

Specialty	Dep.1	Dep.2	Dep.3	Dep.4
<i>Admission and Assessment Units</i>	1.11	1.49	2.42	2.99
<i>Cardiology Wards</i>	0.60	1.15	1.60	3.28
<i>Medical Elderly Care Wards (Acute Hospitals)</i>	0.48	0.72	1.27	1.63
<i>Long-Stay Elderly Care (Community Hospitals)</i>	0.50	0.90	1.30	1.88
<i>Gynaecology</i>	0.78	1.04	1.52	2.19

<i>Hospices - Adult</i>	1.25	1.31	2.30	3.45
<i>General and Specialty Medical Wards</i>	0.42	0.86	1.52	2.57
<i>Neurology Wards</i>	0.57	0.87	1.99	3.61
<i>Oncology/Haematology</i>	0.68	1.20	1.96	3.09
<i>Mixed Orthopaedic</i>	0.55	0.92	1.45	2.33
<i>Rehabilitation Wards</i>	0.49	0.93	1.56	2.17
<i>Infectious Diseases and Single Room Wards</i>	0.83	0.72	1.58	3.25
<i>Stroke Wards</i>	0.60	0.63	1.20	1.70
<i>Surgical Wards</i>	0.71	0.97	1.82	2.89
<i>Trauma Wards</i>	0.73	1.05	1.62	2.88
<i>Vascular Wards</i>	0.49	0.58	1.74	3.61

Table 2

Small Wards

Dep.1	Dep.2	Dep.3	Dep.4
1.73	1.68	2.78	3.86

Table 3

Neonatal

Low	Med/HDU	High/ITU	ECMO
1.40	2.80	5.60	11.20

Table 4

Scottish Children's Acuity Measurement in Paediatric Settings (SCAMPS)

Level 0	Level 1a	Level 1b	Level 2	Level 3a	Level 3b	Level 4
1.00	3.24	3.84	4.39	5.16	5.27	10.98

Table 5

Maternity

Specialty	Level 0	Level 1a	Level 1b	Level 2	Level 3
<i>Ante Natal</i>	1.36	1.38	1.09	1.72	3.45
<i>Post Natal</i>	1.36	1.38	1.09	1.72	3.45

<i>Labour</i>	5.69	5.69	5.69	5.69	5.69
<i>Triage/Assessment</i>	0.67	0.66	0.66	1.28	1.28
<i>Clinic</i>	0.25	0.17	0.16	0.3	0
<i>Community</i>	0.18	0.26	0.22	0.37	0.47

Table 6

Mental Health and Learning Disabilities

Admission/discharge related	Direct Care	Indirect care
Admission process	122	91
Discharge process	75	125

Patient specific	Direct Care	Indirect care
Behavioural observations	120	60
Observation (1:1) up to two days	1440	60
Observation (1:1) between two and four days	4320	180
Observation (1:1) more than 4 days	7200	300
Observation (2:1) up to two days	2880	60
Observation (2:1) between two and four days	8640	180
Observation (2:1) more than 4 days	14400	300
Functional analysis interview	60	60
Number of patients prescribed medication	240	60
Multi-sensory stimulation	30	10
Carer support	30	5
One to one sessions – additional	60	10
One to one sessions – daily	60	10
One to one sessions – three times per week	60	10
Reality orientation	4	4
Asceptic dressing	16.5	
Blood BM test	2	3
Catheter emptying	2	1
Continence care – level 1	16.5	
Continence care – level 2	4.4	
Continence care – level 3	8.8	
Feeding and fluids – feeds with assistance	4.4	
Feeding and fluids – total feeding	22	
Meals and beverages	14	14
Perform search of patient	5	2
Perform search of patient's room	10	2
Personal hygiene – Level 1	5	3
Personal hygiene – Level 2	15	10
Personal hygiene – Level 3	20	10
Personal hygiene – Level 4	20	15
Physical observations, daily – TPR & BP	5	2

Physical observations, twice daily – TPR & BP	5	2
Pressure area care – Level 1	2.2	
Pressure area care – Level 2	5.5	
Venepuncture	5	5

Task specific	Direct Care	Indirect care
1:1 escorted time off ward - up to 15 minutes	10	5
1:1 escorted time off ward - greater than 15 minutes	45	15
2:1 escorted time off ward - up to 15 minutes	10	5
2:1 escorted time off ward - greater than 15 minutes	45	15
De-escalation – no physical intervention	30	20
De-escalation – physical intervention	30	30
Multi-disciplinary care plan review	20	20
Post incident review – rapid tranquilisation/physical intervention	60	10
PRN medication(as required)	7.5	2.5
Structured exercise & conversation session	45	20
Provide enhanced support for palliative patients	60	30
Attend tribunal/court/other hospital	240	30

Groupwork	Direct Care	Indirect care
Socialisation	60	15
Therapeutic	60	15

Table 7

Community Nursing

	Level 1	Level 2	Level 3	Level 4
District Nursing	0.19	0.25	0.27	0.31
Health Visiting	0.24	0.40	0.47	0.55
School Nursing	0.27	0.33	0.55	0.67

Table 8

Community Children's & Children's Specialist Nurse

Level 1	Level 2	Level 3	Level 4
0.32	0.36	0.48	0.53

Table 9

Clinical Nurse Specialist

Level 1	Level 2	Level 3	Level 4
0.16	0.21	0.24	0.34

Table 10

Emergency Care Provision

	Level 1	Level 2	Level 3	Level 4
Nursing	0.23	0.49	0.53	1.47
Doctors	0.12	0.24	0.27	0.73

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