GUIDELINES FOR WARD ROSTERING IN UCMB AFFLIATED HOSPITALS

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INTRODUCTION

The delivery of healthcare requires that a continuous service be maintained for most services. Shift work therefore is a compulsory job requirement for most hospital employees especially for the nursing cadre. An effective duty roster needs to balance the service needs, the employee's needs, and the legal, occupational safety and health requirements (Casley, 1995: ICN, 2000: New Zealand nurses organization, 2003).

Rostering is about having the required staff available for the required work at the required time. However considerations have to made to ensure that the rosters comply with the legal and employment agreement requirements and to ensure fair and equitable rostering of the staff (Casley, 1995: New Zealand nurses organization, 2003).

The guidelines outlined herein put into consideration all the above-mentioned needs and are aimed at acting as a guide to ward managers as they compile duty rosters and to help them minimize the negative effects of shift work. These negative effects include: staff level imbalances, lack of alertness of staff while on duty: low staff morale; costs of higher staff turn-over due to unfair rosters; excessive overtime which can result due to lack of guidelines; decreased motivation and absenteeism probably due to chronic fatigue.

BACKGROUND

The request to develop rostering guidelines for UCMB affiliated hospitals followed a recommendation from the staff establishment study, which was commissioned by UCMB (Namaganda, 2003). In this study it was found that the present numbers of nurses in the hospitals were sufficient for the present workload. However there were two major problems that contributed to the felt work pressure among the nursing staff. These were:

Inappropriate use of the available qualified nurses due to an acute shortage of nursing assistants. This implied that the qualified nurses were doing work meant for nursing assistants in addition to their own work and hence the felt pressure.

There were staff inequalities with the work pressure for individual nurses varying both within and between wards. For example on close scrutiny of the duty rosters, one would find that not all the nurses on that ward worked for the same hours in the roster period. Some nurses would work for less or more than the recommended hours for that roster period. This meant therefore that the individual nurses were working under varying work pressure. This was all attributed to the ineffective duty rosters and therefore needed to be improved hence the need for guidelines on how to do this.

During the same study it was also observed that the rostering methods used varied a lot among the hospitals. Some of the methods used were backed up with either clinical or legal guidelines but there were also methods that were being used just because they were found in place but with no legal or clinical explanations. There was need therefore to

develop standard guidelines so as to have standard rostering methods in UCMB affiliated hospitals.

METHODOLOGY

The methodology used to obtain the rostering guidelines involved three main steps.

1. Literature review
2. Experience sharing through questionnaires with senior nursing officers (SNO) of all hospitals and
3. In-depth discussions with SNOs / ward managers of eleven selected hospitals.

The first part of the methodology involved an extensive Internet based review of literature with the aim of getting a broad picture of how rostering is done worldwide. This was to enable us borrow successful practices so as to improve on nurse rostering in UCMB hospitals. All the literature obtained was from outside Africa but it compared well with the practice in UCMB hospitals.

After knowing how rostering is done in other countries, the problems faced and how such problems have been overcome, there was need to understand in depth the problem as it is in UCMB affiliated hospitals. So a self-administered questionnaire was formulated and distributed to all SNO / ward mangers of UCMB affiliated hospitals. The aim of the questionnaire was to find out what the practice of rostering is, the problems faced and measures that have been used by the various hospitals to overcome these problems. Responses were got from thirteen hospitals out of the twenty-seven hospitals to which the questionnaire had been sent. This response (48%) was enough to give us the general rostering practice as it is in UCMB affiliated hospitals.

Most hospitals (67%) acknowledged that rostering is a problem to them and the commonest problems faced were:

1. Shortage of staff
2. Unplanned for events like sickness, termination of services, loss of relative etc
3. Lack of clear guidelines
4. Un even distribution of workloads in the different shifts with some shifts being more demanding than others.
5. Conflict among staff and
6. Dissatisfaction of staff with the duty rosters.

With the above problems in mind, we closely analyzed the present rostering methods in regard to service needs, employee's needs, legal and employment agreement and occupational safety and health requirements. We observed that there is a variation in the rostering practice in the hospitals. We therefore identified some key areas, which needed to be standardized in line with the above considerations and also be able to solve the problems identified above. These areas included the following

1. Roster schedule: the number and length of shifts, start and end time for the different shifts
2. Roster grid – period covered by the roster and how many days on and off for the various shifts per week and getting an incentive for night duty.
3. Rostering method

    a. Fixed rosters where there is a set of fixed days on and days off? Or
    b. Rotating rosters where each staff moves through each of the duties and spreading out to include all days of the week?

4. Direction of shifts- forwards or backwards?
5. Calculating the off days: Calendar days or 24-hour days?
6. Period of having roster ready before commencement of roster
7. Sickness and other absences
8. Compensation of staff who work more than the recommended 40-45 hours a week or work on a public holiday

    c. How to compensate them (cash or days off in lieu?)
    d. When to compensate them

9. Self-rostering: its viability in UCMB affiliated hospitals.
10. Calculating staff numbers needed to manage a roster
11. Calculating staff numbers needed to manage the ward in 24 hours given the current staff numbers

The above issues were the basis of the consultative workshop held with eleven ward managers from nine of the hospitals from which we got responses. The nine hospitals were selected basing on their distance from Kampala for convenience and to minimize costs. The aim of the consultative workshop was to exploit the ward managers experience, compare the present practice and with results from literature, get an in depth understanding of the issues so as to understand their implications in terms of clinical needs, health and safety needs, and legal and employment requirements.

During the workshop, presentations on the background of the need to develop rostering guidelines, rostering practice from literature and the practice as it is in UCMB hospitals were given. This was to act as a foundation for deeper discussions on the above-identified issues.

The participants were divided into two groups and asked to discuss each of the issues and come up with recommendations for each. Later each group was asked to present their recommendations and also defend them basing on service needs, employee' needs, legal and employment agreement and occupational safety and health requirements. This would then be debated until a consensus was reached.

A summary of these recommendations now constitutes the guidelines. The guidelines are presented per issue tackled with a rationale. They are not directives that have to be

followed by all hospitals but just guidelines that would be helpful especially in hospitals that are still finding problems with rostering.

GUIDELINES

WORKLOADS

In the previous study on determining staffing levels and skill mix, hospital work was divided into small measurable units referred to as activities. These activities were then timed to get how much time is spent on each by each staff cadre. When these activities were arranged in such a way as to correspond to the time of day when they are done, it was realized that most activities were done in the morning (8am-1pm), followed by night (8pm-8am) and evening (2pm-8pm) had the least activities done. The ratios were 2.5: 2: 1 for day night and evening respectively. This therefore implies that for efficient utilization of staff, the staff numbers would follow the same arrangement with morning shift having the highest number of nurses, followed by night and with evening having the least. The trend of workloads varies from ward to ward but generally this seems to be the observed trend.

ROSTER SCHEDULE:

Our recommendations on the roster schedule are that hospitals could consider having three shifts. The choice between either split duties or non-split duties is a choice to be made at the hospitals' discretion although we highly recommend the split duty.

Table 1 -Split duty

8am	9	10	11	12	1pm	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7am	8
M	O	R	N	I	N	G																		
S	P	L	I	T					S	PL	I	T												
												N	I	G	H	T								

Split duty has three main shifts: morning, split and night.

Morning duty, starts at 8 am and ends at 5pm with one hour for lunch break. The lunch break would be taken in turns not with all staff breaking off at the same time. This is equivalent to 8 hours of work for the morning shift.

Those on split duty also report to work at 8 am, work up to 1pm and break off up to 5pm when they report back and work up to 8pm.In total nurses on split duty also work a total of 8 hours.

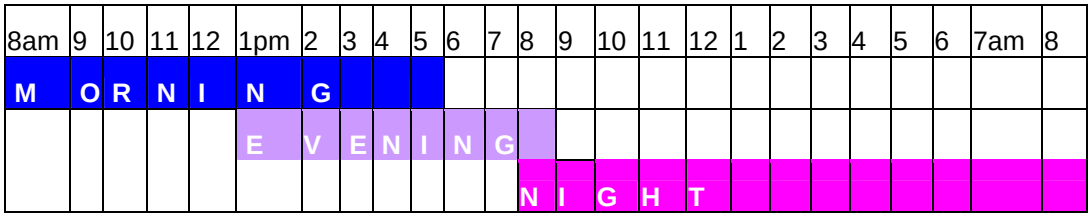
Night duty starts at 8pm and works till 8am.This is an equivalent of 12 hours of night duty.

We highly recommend split duty because of its efficient use of staff. It provides the right numbers of staff at the right time. That is, it matches staff numbers to workloads. In the

morning between 8am to 1pm when there is a lot of work to do on the ward, split duty provides nurses to beef up the staff needs

The main disadvantage with split duty is that it is inconveniencing to staff because those on split have to report to work twice in a day. So a compromise has to be struck between efficiency and convenience.

Table 2-Non split duty



The non-split duty also has three shifts: morning, evening and night.

Morning duty starts at 8 am and ends at 5pm with a one-hour lunch break .The total time worked is equal to 8 hours a day. Evening staff report at 1pm and work up to 8 pm an equivalent of 8 hours a day. Night duty is the same as for split duty.

The main disadvantage with this arrangement is that it is quite inefficient in that it builds up staff numbers at inappropriate times. The highest numbers of nurses is on duty between 1pm and 5pm when actually the workload is low.

Rationale

The choice of the number of duties to be worked is between three shift duties and two shift duties. In the three-shift duty arrangement, the 24-hours in a day are broken down into three different shifts of various lengths and each is worked by different sets of nurses. In the two shift duties on the other hand, the 24-hours in a day are split into two shifts (day and night duties) each of equal length. It entails working for at least 12 hours in each of the shifts.

We are therefore recommending three shifts with 8hours for morning, 8 hours for evening or split and 12hours for night and not 12hours for day and 12hours for night because of the following reasons:

- The 8-8-12 arrangement is easy to manage and follow and it does not strain the staff. While with the 12-12,the nurses would work long hours and by the end of the day would be very tired. This reduces both safety and quality of services.
- The eight hours worked during the day are in line with both the employment manual and other legal requirements.
- Because the hours worked are few, it does not fatigue the nurses and therefore improves safety to both the staff and patients.

- The days' workload is shared among many nurses each working for few hours and this can be motivating to the staff.

ROSTER GRID

In line with the above recommendations, the 8-hour, 40 hours a week rotating roster grid is recommended that is, 5 days on + 2 days off four weeks cycle. This will vary with how many days of night duty the hospital has decided to use. We are going to give an illustration depicting the different scenarios. The scenarios are where the hospitals have 7 days of night duty and where they have 4 days of night duty.

Table 3-The integrated grid

	IST WEEK							2ND WEEK							3RD WEEK							4TH WEEK						
	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
A	N	N	N	N	N	N	N	O	O	O	O	O	O	M	M	M	M	M	O	O	E	E	E	E	E	O	O	V
B	N	N	N	N	O	O	O	O	M	M	M	M	M	O	O	E	E	E	E	E	O	O	M	M	M	M	O	O

Key

M morning shift
E evening or split duty
N Night duty
O off duty
V overtime

Table 4-Showing Calculation of hours

Nights/month	Rostered weeks	Total hours/for work	Total hours for one night duty	Hours for day duties	Number of day duties
7	4	160	84	76	9.5
4	4	160	48	112	14

The row marked A in figure 3 represents the roster as would appear for one nurse in whose hospital night duty is worked for seven nights. This would be followed by 6 days off as will be explained later. With such an arrangement, each nurse is able to rotate through all the three different shifts. In total each nurse works a one 7- day night duty and 9.5≈ 10 days of day duty (figure 4). This day duty could either be morning or evening /split or just any one of these.

In figure 3, the nurse starts with night duty, after her/ his off duty works morning duties and finally ends with either evening or shift duty depending on what roster schedule is being used in the hospital.

Rationale

In total the above nurse will have worked a total of 164 hours versus the recommended 160 hours in 4 weeks. This is the reason for the one overtime duty off at the end of the cycle. Ideally the overtime is 4 hours and this nurse should ideally get 4 hours off. But 4 hours off is hard to give and it would disrupt the roster hence the one day. This arrangement therefore becomes inefficient in the long run.

The row marked B represents the roster as to would appear for one nurse in whose hospital night duty is worked for four nights. This would be followed by 4 days off as will be explained later. With this an arrangement, each nurse is able to rotate through all the three shifts with one 4-day night shift and 14 days of day duty. The day duties would include two 5day shifts and one 4-day shift.

Rationale

In total the above nurse will have worked 160 hours as recommended in 4 weeks. For this reason alone we highly recommend this rostering grid because it is very efficient in staff utilization.

The main advantage with this grid is that it is mathematically calculated and does not create any overtime for any staff. At the end of the 28 days, each staff will have worked a total of 160 hours, which is in line with the employment and legal requirements. It is also long enough to allow staff rotate through all the duties but short enough to be adhered to without need for changes.

These roster grids should not be thrown away after their time has expired but should be used as a basis for the development of the next grid. This ensures fairness in the treatment of staff.

Time on and off for each of the duties.

As per the employment manual, it is recommended that for every 40 hours worked in a week; each staff is entitled to two days off. So it goes without saying that for every 5 days of day duty a nurse is entitled to 2 days of off duty. The snag is on how to count these off duties. We hereby recommend that these off duties be counted as calendar days so that they correspond to what other staff who are not subject to rostering get. A staff that is not subjected to rostering goes off duty at 5pm Friday and reports back to work at 8 am on Monday morning. He /she has Saturday and Sunday as days off and in total he/she is off duty for 62 hours which is more than 48 hours if we were to consider 24 hour days.

The calendar days are counted starting the day next to the day she/he breaks off from work. For example if a nurse works five morning duties and breaks off at 5pm on Wednesday then she /he has Thursday and Friday as her/his days off and reports to work on Saturday.

For night duty the hospitals have the prerogative to choose from the recommendations on night duty, below, to use. Generally findings from the self-administered questionnaires suggest that night duty is not a favorite to many nurses especially because it keeps them away from their families. So there was need to identify an inbuilt incentive for night duty.

We therefore recommend that as an incentive, in addition to their entitlement of 2 calendar days off, nurses who work night duty be given days off in lieu of night duty. This implies that if a hospital chooses 7 nights on night duty, then such nurses would be entitled to 6 days of off duty. On the other hand if a hospital chooses 4 nights on duty, such a staff would be entitled to 4 days off duty.

Rationale

The explanation is as follows:

7 nights of 12 hour night duty is equal to 84 hours of work, which is equal to 84 hours equivalent of off duty. But this nurse is also entitled to 2 calendar days off (not exceeding 62 hours). So total time off would be 2 calendar days + 84 hours (3.5 +24 hour days) days.3.5 days is approximately equal to 4 days. Therefore each nurse who works 7 nights is entitled to 6 days off.

On the other hand, 4nights on night duty equals to 48 hours of duty, which is equal to 48 hours of off duty. This is equal to 2 days off. This plus 2-calendar days entitlement equals to a total of 4 days off.

4 days on night duty followed by 4 days off is highly recommended because it is mathematically very easy to manage. You could have a specific number of nurses set aside purposely for night duty and they would manage it effectively without any

problems. Seven days are also very long for one to be on duty as they develop chronic fatigue given that the workloads are usually high and staff numbers low. Hospitals are strongly advised against rostering nurses for more than 7 nights in a row (chronic nights) for health and safety reasons.

ROSTERING METHOD

We would also like to recommend the use of rotating rosters (where each staff moves through each of the duties and spreading out to include all days of the week) versus fixed rosters (where there is a set of fixed days on and days off).

Rationale

This is because rotating rosters are fair to all staff and this is a major motivating factor for the nurses. In addition, rotating rosters encourage the nurses to gain wider work experience and also assist in maintaining a harmonious workforce. The main disadvantage with this rostering method however is that because of the wide work variation, it is hard for the staff to develop routine in their work.

In addition it is advisable to make special provisions for either the ward manager or the assistant to always be on duty during the morning hours.

It is also advisable to put into consideration the experience, competency and cadre of staff when deciding on whom to roster on the different shifts. A balance of the above factors should be ensured at all times so as to march the staffing numbers and mix to the clinical needs.

DIRECTION OF SHIFTS

For health reasons we recommend that the direction of shifts be forwards with a nurse who worked morning duty working evening duty next and night duty there after in that order.

Rationale

This direction was found to disrupt the circadian rhythms least. The circadian rhymes are biological rhythms synonymous with a biological clock that determine the cycle of peak efficiency on various body functions. Disruption of these rhythms has unhealthy consequences (Casley, 1995).

CALCULATING THE OFF DAYS

We recommend that days off after day duty be counted in terms of calendar days but the total time off should not exceed 62 hours in total. The days off for night duty could also be counted in terms of calendar days but should not exceed 146 hours and 110 hours in total for 7 nights on and 4 nights on duty respectively.

PERIOD OF HAVING ROSTER READY BEFORE COMMENCEMENT OF ROSTER

It is advisable to have a draft roster ready at least two weeks prior to the roster period to allow for comments. Then after this the final roster could be ready at least a week before the start of the roster. It is important to remember that with any given roster, there will always be at least 20% of the people dissatisfied with the roster and accommodating these 20% will make another 20% dissatisfied (Casley, 1995).

SICKNESS AND OTHER ABSENCES

Other than shortage of staff, unplanned absences due to sickness and other absences were the second most common problem mentioned by the nurses who were interviewed. So a provision has to be made for these absences. The problem however faced in determining how many days to provide for the above is the lack of data on how many nurses are absent from work due to sickness and other absences. So we came up with allowances for these absences basing on literature. And the following provisions were made:

- 10 days allowance for workshops and training /year
- 5 days allowance for other absence and sickness (Ministe′re de la sante republique Rwanda, 1997)
- 10 days allowance for CME (1.5 hours a week)
- We also recommend that ward managers keep data on staff absences due to sickness, workshops and other absences stating the reason. This will enable UCMB hospitals to come up with more realistic provisions for these absences say after 6months to one year.

COMPENSATION OF STAFF FOR OVERTIME

Hospitals can choose to compensate staff who work on public holidays or those who have worked more than the stipulated hours with equivalent time off for compensatory rest as stipulated in the UCMB employment manual. We on the other hand highly recommend that such staff be compensated with cash. This is because compensation in terms of cash would distort the rosters least and may also be a source of motivation to the staff.

For hospitals that choose cash, the amount paid would be 1.5 times the usual hourly rate. It is equal to (monthly pay x 1.5) divided by normal working hours in a month. This would be paid together with salaries at the end of the month.

SELF-ROSTERING

Self rostering means agreeing on the staffing levels and skill mix required at any time in the day and then giving the staff the ability to schedule their working day collectively to meet these requirements. The aim is to promote communication and cooperation among the workers as they develop a roster and to balance the personal and work commitments of all staff. The main advantage is that it encourages staff to look for solutions rather than

focusing on the problem and also empowers staff to manage themselves (NHS Trust, undated). The biggest disadvantage of this method is that it can lead to a scramble amongst the nurses for preferred shifts and therefore becomes a source of conflict.

With this in mind we recommend that self-rostering per se may not be used but some degree of self-rostering could be encouraged in the hospitals. Ward managers could encourage the nurses to submit their special requests for example for days they need to be off in that particular month say to attend to personal needs etc. These requests have to be made in advance before the rosters are made and such special requests should be minimized otherwise if they are very many, it becomes hard to make the roster.

Annual leave schedules and any visiting medical teams should also be available to ward managers before the compilation of the rosters. We recommend that annual leaves for staff be scheduled in a such a way that they correspond to periods when the hospital /ward is not so busy. A trend analysis of patient inflow into the hospital gives an idea in which months the patient workload is high and in which month they are low. So the nurses can then be encouraged to take their annual leave in months with low patient loads.

Staff cooperation could be encouraged where staff can agree between themselves to switch duties to suit their personal preferences or in cases of unplanned absences.

Rationale

If done well, accommodating staff requests could be a motivator to staff and also tries to cater for staff needs, which may reduce absenteeism.
Scheduling staff leave in months when patient loads are low ensures that in periods of high workloads sufficient manpower is available to handle the workload.

CALCULATING STAFF NUMBERS NEEDED TO MANAGE A ROSTER

The number of staff needed to manage a roster can be calculated if the staff needed for each of the shifts is known. However in our case this is not known, although estimates can be made for each ward, they are likely to be biased. The required staff needed would vary with workload, morbidity patterns and the size and location of the hospital. So due to this shortcoming, the numbers of staff needed to manage a roster were not calculated.

CALCULATING STAFF NUMBERS NEEDED TO MANAGE THE WARD IN 24 HOURS GIVEN THE CURRENT STAFF NUMBERS

This can be calculated if the roster index is known. The roster index is obtained by dividing the total operational days for the hospital in a year by the days that the nurse is actually on duty in that year.

A nurse is on duty (365 – legitimate absence days) days a year. The legitimate absences are:

2 off day per week in a week	104
Annual leave (= 30 days-8weekends)	22
Public holidays (13 for Uganda + 3 for UCMB)	16
Allowance for workshops and training /year	10
Allowance for other absence and sickness	5
CME (1.5 hours a week)	10
Total unavailable days	167
Total operational days	365
Total available days	**198**

Roster index =365/198 =**1.843**.This index is true for all nurses working in UCMB affiliated hospitals. When you divide the present ward staffing with this index, what you get is the total number of nurses you can roster on that day (24 hours). If you roster more than this number, you are likely to get a shortage.

For example for a ward with 12 nurses, the nurses you would roster in a day should not exceed (12/1.843) = 7 nurses. So it is up to the ward manager to decided how many nurses to put on morning, split and night duty.

It is worth noting that there are instances where a ward manager finds himself/herself with extra nurses after rostering the 7 nurses per day as per the above calculation. Such instances will occur if for example you do not have any of your staff falling sick, going for workshops or attending CME. Such a manager is then free to roster the excess nurses, as she/he deems appropriate.

The methodology is adopted from Bill Casley as explained in the “union guide to shift workers and rosters”(Casley, 1995).

CONCLUSION

The above guidelines are for rostering-qualified nurses. So at any given time, all shifts should have appropriate qualified nurses on duty. Students and nursing assistants should be an addition to the roster and not substitutes for qualified nurses. Depending on the workloads and after rostering all the qualified nurses, ward mangers can then roster the students and nursing assistants to assist the qualified nurses. Ward managers could consider developing separate rosters for the three different cadres and later merging them to enable then balance qualification, experience and competency of the staff per shift.

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