The Electronic Hallway ®
Case Teaching Resources FROM THE EVANS SCHOOL OF PUBLIC AFFAIRS
Box 353060 · University of Washington · Seattle WA 98195-3060 www.hallway.org

BURN-CARE UNIT

One of the hospitals of a major multi-unit corporation has a nationally reputable referral Burn Care Program in Augusta, Georgia. The program was established in 1978 with an expansion of O.R. facilities and converting one of the nursing units into a burn care unit with 20 beds. By 1991 the unit was expanded to a 40-bed unit by including an adjacent unit. The program has been highly successful and financially rewarding for the hospital until recently when the managed care contracts have significantly reduced the reimbursement levels.

Augusta has experienced a nursing shortage during the last three decades, into the 1990s. The burn care program has always suffered from the nurse staffing problems. To recruit nurses, the hospital offered a Baylor Plan for scheduling nurses on the burn care unit in 1982. The plan consisted of nurses working 12-hour shifts on weekends, thus working 24 hours per weekend and getting paid for 36 hours (because of overtime policy) with full-time benefits. Therefore the nurses who worked on weekends did not work on weekdays. During the week, nurses worked 12-hour shifts for five days (Monday-Friday), thus working 60 hours and getting paid for 70 hours (because of overtime policy) with full-time benefits. Those nurses who worked on weekdays worked for five continuous days and were off the next nine days (two weekends and the following week). This scheduling basically consisted of three groups of nurses. One group worked the first week of a two-week pay period, the second group worked on the weekends, and the third group worked the second week of the pay period. This scheduling allowed nurses to have more leisure time or time for a second job, which many nurses were doing through agency nursing. This plan was proposed by the nurses and was adopted in May 1982 by the administration for all intensive and critical care units including Burn Care, Coronary Care, and Intensive Care. Other medical, surgical and pediatric units are a using regular eight-hour scheduling system with shift rotation and weekend rotations. Most other hospitals in the community have also adopted similar Baylor Plans during the 1980s for nurses in ICUs and CCUs in order to improve recruitment of nurses.

The hospital's *budgeted nurse-staffing standard* in 1996 was 22 hours per patient per day (HPPD). The staff nurses on the unit, however, generally complained that the staffing levels were not sufficient to provide quality care to the burn patients. In December 1996, the hospital

implemented Medicus patient acuity system for staffing and adopted 3.5 hours of direct care per acuity point as its *worked nurse-staffing standard*.
In May 1993 Mr. Adams, the regional vice-president of the corporation and an accountant by training, wrote a letter to Mr. Warden, the CEO, that he should discontinue the Baylor Plan as it was costing about $800,000 more in nursing payroll. The CEO discussed the memo with Mrs. Turner, the vice-president of nursing for the hospital. Within a few days the VP for nursing discussed the situation with all of the nursing directors. The next day, the head nurse of the burn care unit came to see the VP for nursing and informed her that the morale of the nurses was going down very fast and many were considering resignation. Several days later, Dr. Smith, the physician in charge of the burn care program, came to see Mr. Warden and informed him of a union activity and that some of the nurses were planning to go on strike. (The hospital nurses are not unionized, but there is a history of a nurses strike in 1979, which was settled in favor of nurses' demand for higher wages and benefits.)

Mrs. Turner was asked by Mr. Warden to contact Ms. Jones, the VP for nursing at the corporate office to provide assistance in the situation. Ms. Jones and Mr. Johnson, the director of Management Engineering, visited the hospital. After several weeks of communications between the corporate office, regional office and the hospital, the president of the hospital division of the corporation decided that the matter should be solved at the local level. The hospital, however was asked to reduce the operating expenses for the burn care patients. It was pointed out that burn care will no longer be a profitable product line under the managed care contracts. The hospital was given a goal of reducing operating expenses by $500,000 for the burn care unit.

The corporation has hired you to assist Mr. Warden in solving this problem. The corporation has a perfect Management Information System (Ha! Ha!). I am providing you with the necessary data to solve the problems. Your job is to reduce operating expenses by $500,000 without reducing the quality of care or services to patients. You must also avert the nurses' strike and maintain their long-term job satisfaction. You can implement any change, use any strategy to reduce your expenses. If your strategy involves capital expenditure, then it must be paid for with interest within three years by the additional savings in operating expenses.

Assignment:

1. Develop a method of estimating the annual labor cost of operating the unit (use guideline provided with the case);
2. Determine alternative strategies for reducing labor expenses;
3. Estimate potential cost savings from each strategy at various levels of implementation
4. Choose your strategies and provide your implementation plan;
5. Make your Group report to the CEO of the hospital with a two-page **executive summary** and a full report not to exceed 15 pages double-spaced, excluding appendices, charts and tables.

Available Data

The following data is provided for your consideration.

Census and Acuity Data by Pay-Period

The hospital uses the Medicus staffing system, which keeps data on a daily basis only for one month. After one month the data is stored by pay-period only. Therefore, you have one year of data on census and acuity.

	PAY PERIOD	ADC	ACUTIY	WORKED FTE BY TYPE			
				Regular	Flex-pool	Agency	Total
1	SEPT.	19.7	2.50	84.00	0.00	0.00	84.00
2	SEPT.	19.7	2.60	83.00	0.00	0.00	83.00
3	OCT.	21.2	2.60	88.00	0.00	0.00	88.00
4	OCT.	25.7	2.58	98.00	0.00	0.00	98.00
5	NOV.	28.8	2.90	99.00	0.00	0.00	99.00
6	NOV.	36.3	2.87	99.40	10.00	10.60	120.00
7	NOV.	39.3	2.76	99.00	9.50	21.50	130.00
8	DEC.	36.3	3.20	99.80	9.70	15.50	125.00
9	DEC.	39.3	3.40	100.30	9.10	20.60	130.00
10	JAN.	39.3	3.10	100.40	9.30	21.30	131.00
11	JAN.	39.3	3.20	106.31	8.90	13.80	129.00
12	FEB.	39.3	3.60	105.64	10.00	6.36	122.00
13	FEB.	39.3	3.40	106.50	11.80	6.71	125.00
14	MAR.	39.3	3.60	106.78	12.60	12.62	132.00
15	MAR.	36.3	3.40	106.31	12.90	4.79	124.00
16	APR.	33.3	3.20	104.50	12.60	4.90	122.00
17	APR.	30.3	3.10	106.50	12.50	1.01	120.00
18	APR.	30.3	2.90	106.02	12.90	1.08	120.00
19	MAY	26.5	2.90	105.36	12.00	0.64	118.00
20	MAY	26.5	2.70	104.22	10.10	1.69	116.00
21	JUN.	25.1	2.50	102.51	11.60	1.90	116.00
22	JUN.	25.1	2.20	101.46	9.90	2.64	114.00
23	JULY	22.7	2.40	97.19	9.20	3.61	110.00
24	JULY	21.5	2.50	90.00	0.00	0.00	90.00
25	AUG.	19.7	2.50	90.00	0.00	0.00	90.00
26	AUG.	19.7	2.30	89.00	0.00	0.00	89.00

ALOS: 10 days

Budgeted Daily Staffing Pattern

The following data represents the budgeted staffing on a daily basis by shift for the week-days and the weekends. This staffing pattern was budgeted for ADC of 30 patients and thus provided the staffing standard of 22 HPPD.

BURN UNIT	DAILY STAFFING PATTERN BY SHIFT			
	AM	PM	TOTAL	SKILL-MIX
HN	1	0	1	1.8%
RN	19	19	38	69.0%
LPN	4	4	8	14.6%
NA	4	0	4	7.3%
US	2	2	4	7.3%
TOTAL	30	25	55	100.00%

Salary Structure

I am providing you with the updated salary structure information for the hospital using 1994 data. Your objective is to save $500,000 in salary expenses using the 1994 salary structure. Definition of various categories of employees is provided below.

	REGULAR			FLEX-POOL			AGENCY NURSING		
	DAY	PM	N	DAY	PM	N	DAY	PM	N
HN	$17.50								
RNs	$14.50	$16.00	$17.50	$16.00	$17.50	$19.00	$22	$24	$25
LPNs	$9.80	$10.80	$11.80	$11.30	$12.30	$13.30	$16	$17	$18
NA	$6.50	$7.50	$8.50	$7.50	$8.50	$9.50	$12	$13	$14
US	$7.50	$8.50	$9.50	$8.50	$9.50	$10.50	$13	$14	$15

Regular employees -- These are employees who work full-time or part-time with benefits. Part-time employees also receive benefits on a pro-rated basis. Benefits are estimated at 30% of the salary level. You can calculate the salary costs and the benefit costs from the data provided.

Flex-pool -- These are employees who work on a need basis and they do not have any home base. They float from unit to unit depending upon the need for staffing. These employees also receive benefits like regular employees.

Agency Nurses -- These nurses are hired from an agency on short notice to work in the hospital. They do not receive any employee benefits from the hospital.

WORK-SAMPLING DATA

Percent Time Distribution by Task and Level

TASK CATEGORY	RNs	LPNs	NA	US
DIRECT:	42	58	50	00
PROFESSIONAL	22	28	10	
NON-PROFESSIONAL	20	30	40	
INDIRECT:	32	26	35	70
PROFESSIONAL	20	16	5	
NON-PROFESSIONAL	12	10	30	
UNIT-BASED	18	07	05	20
PERSONAL	08	09	10	10
TOTAL	100	100	100	100

Acuity Classification

Acuity Class	I	II	III	IV	V
% distribution of ADC	10	30	30	20	10
Acuity Score	0.5	1	3	5	6.5
Direct care Standard	1.75	3.5	10.5	17.5	22.75

ALOS: 10 days

Employee turnover rate per year: 12% (# FTEs turned over in one year/# of FTEs worked).

Nursing Care Delivery Structure: Primary Nursing with RNs, LPNs and aides.

Technical Support Systems: Mostly centralized distribution systems and centralized order-entry and result reporting technology. Patient-call communication system with good data base report writer and nurse-locator system.

Guideline for Estimating Labor Expenses

1. Total cost = Cost for regular staff (pay + overtime + benefits) + flex staff (pay + benefits) + agency cost
   = Regular pay+(reg. pay*overtime-ratio)+(reg. pay*benefit-ratio) + flex staff cost + agency cost.
   = Regular pay(1+overtime ratio+benefit ratio)+flex staff cost+agency cost
   = Regular Pay*(1+.25+.3) (see 1.2 and 1.3 below for calculations)
   = 1.55*Regular pay

Here we are assuming that only the regular staff makes overtime under the Baylor Plan. The Flex staff is generally a part-time staff and works 8- or 12-hour shifts without overtime but they receive benefits. Agency nurses do not earn overtime or benefits from the hospital.

1.1 Regular pay is defined as the salary expenses associated with regular staff working Baylor Plan. Regular pay = (worked hours * average wage per hour) for regular staff. Average wage can be calculated using the salary structure data and skill-mix data.

1.2 Over-time = (5/7)*weekday overtime ratio + (2/7)*weekend over-time ratio = (5/7)*70/60 + (2/7)*36/24 = 1.25 or overtime ratio = .25

1.3 Benefit is given to be 30% of regular salary or the benefit ratio = .3.

1.4 Flex staff cost = worked hours by flex staff* average wages per hour.*benefit ratio(1.3). Average wage per hour can be estimated by assuming that the skill-mix of flex pool is the same as that of regular staff given in the Daily Staffing guidelines. Or make other assumptions as you see fit.

1.5 Agency nurse cost could be calculated in the same manner as the Flex staff cost.

Step-by-Step Process for Calculating Average Wages

Calculate weighted average wages for all Regular employees for the two 12-hour shifts

1. Calculate skill-mix weighted average wage for all employees for the three 8-hour shifts. You can use overall skill-mix % distribution as the weights for all shifts; or you can use skill-mix % distribution by shift as your weights. Either of the approaches will be precise enough for this case. You can use either approach; it will not affect your evaluation of strategies to reduce cost.
2. Calculate weighted average wages for the two 12-hour shifts. For the Day/evening 12-hour shift, weigh AM shift by 2/3 and PM shift by 1/3. Similarly, calculate the weighted average for the Evening/Night 12-hour shift.
3. Calculate weighted average for the 24-hour period by weighing the two 12-hour shifts in proportion to the staffing numbers (see Daily Staffing Pattern data).

Strategy for Improving Technical Support Systems (TSS)

If you are considering improvements in technical support systems (information systems, communication systems, distribution systems), then your savings must exceed the capital cost of technologies amortized over a three-year period.

Technical support system efficiency improvement and the required capital investment (see table) examples:

1. To improve percentage of nurses' time in direct care from 45% to 50% would require investment of $200,000.

2. To improve percentage of nurses' time in direct care from 50% to 55% would require an additional investment of $500,000. That is, to improve efficiency from 45% to 55% would require a cumulative investment of $700,000.

Marginal Capital investment (Thou.)	cumulative Capital investment (Thou.)	Efficiency of TSS
$ -	$ -	0.45
$200	$200	0.5
$500	$700	0.55
$700	$1,400	0.6
$1,000	$2,400	0.65

Group # :
Names:
1.
2.
3.
4.

Additional Data Request Form

Data Definition	Time-period	Info. System Source -	Remarks Why do you need this data? (Link data to strategy)
Example: Daily Census	**Three months (Jan., Mar., May)**	**ADT System**	Daily fluctuation analysis to design flexible staffing system