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CITY CENTER HOSPITAL (A)

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City Center Hospital ("CCH") operated a large teaching hospital that served a major southern city and drew patients from a large surrounding rural area. The hospital had developed a reputation for first class health care, sound management, and an innovative approach to the provision of health care services.

During the last decade, CCH had come up with a number of innovations that had first been proven through internal use and had then been developed into marketable products. These products had been acquired by many other major hospitals, and CCH was keen to see its reputation as an innovator enhanced in this way. Adoption of its products and ideas elsewhere also made a significant contribution to income.

Many of CCH's recent innovations had emerged from the Information Systems Group that had been strengthened to provide sufficient resources to seek out potential new applications of information systems technology. Following a development period of about one year, the group had tested a new computer system to assist nurses who were staffing inpatient care areas.

INPATIENT CARE AT CCH

CCH was a major, full-service, teaching hospital with about eight hundred beds, a dozen operating rooms, a large outpatient care facility, and twenty-four-hour emergency room service.

Inpatient care was arranged by "floors", each made up of four "wings". Wings averaged about twenty beds each and were arranged according to treatment or patient condition. "General medical" patients occupied two complete floors and part of a third (ten wings in all), while "surgical" patients occupied three floors (twelve wings). Other care areas occupied less than a whole floor (for example, "maternity" occupied two wings), or just a single wing (for example, "HIV care").

CCH nursing staff were assigned to a specific wing and were identified according to their qualifications. Registered nurses (RNs) were university graduates, while nursing assistants (NAs) were graduates of a two-year college program. NAs performed many of the same tasks as RNs, although NAs were not permitted to administer medications to patients. The normal staffing level for a wing ranged from two to

four RNs working with one or two NAs. Night shift and weekend staffing levels were usually lower than day shift, weekday levels.

THE NEW COMPUTERISED ADMINISTRATION SYSTEM FOR USE BY NURSES

Nurses spent considerable time maintaining patient records. This work included writing notes about patients, keeping track of patient treatment or medication needs and orders, and recording medications and treatment given to patients.

The new computer system was designed to streamline this activity, and had been tested in several areas of the hospital where it was well received by the nursing staff. Following considerable internal review and evaluation, management made the decision to implement the new system throughout the hospital. This decision was taken in the belief that the new system reduced nurses' time spent on administrative work, enabling the nursing staff to spend more time providing care to patients.

CCH management recognised that being able to demonstrate this belief objectively would be a powerful tool when marketing their new system to other hospitals.

ASSIGNMENT:

Design an experiment to evaluate the new system.

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CITY CENTER HOSPITAL (B)

City Center Hospital ("CCH") initiated an experiment to evaluate its new computer system for use by nurses (see City Center Hospital case).

In the first part of this experiment, two surgical wings were selected. One wing ("10-Gold") had been using the new system for some time, while the second wing ("8-Blue") was still using the old system.

For a period of one week, nurses (both RN and NA) working twelve-hour day shifts on 8-Blue or 10-Gold were provided with a diary which divided the shift into five-minute intervals. Twenty-four categories of activity were listed under several headings: for example, "Giving Medication", "Hygiene", "Assessments", under the heading "Direct Patient Care"; "Food service", "Housekeeping", under "Non-nursing Tasks"; and "Paperwork", "Breaks", and "Nursing Administration", under the heading "Indirect Patient Care". By checking spaces corresponding to activities, the diarist could quickly and easily record the time spent on various activities during the shift.

A staff person met nurses at the start of their first shift of the week to explain the diary and to seek co-operation from the nursing staff in the data collection process. Nurses were asked to carry their diary with them at all times and to make entries in it as close as possible to real time. The exact purpose of the diary keeping was not revealed.

During the week of the data collection, diaries were completed by 36 RNs and 13 NAs on the 8-Blue wing, and 34 RNs and 12 NAs on the 10-Gold wing. All nurses who were asked turned in a completed diary. The results were tabulated and a summary is presented in Exhibit 1. This summary shows total reported time spent for each major heading, plus reported time spent on "Nurse's Administration", the task most affected by the new computer system (time spent on "Nurse's Administration" is also included under "Indirect Patient Care").

In tabulating the results from the diaries, two problems were encountered. First, many nurses checked more than one activity per five-minute time slot. In this case, the time was evenly divided between activities: that is, if two activities were checked, two and one-half minutes were assigned to each checked

activity; if five activities were checked, one minute was assigned to each. Second, there were many time slots where no activity had been checked. These time slots were left uncounted with the result that the total reported activity time for many nurses was less than the 720-minute length of the shift.

ASSIGNMENT

1. What do these results show about the effect of the new system?
2. Would you recommend further experiments?

Exhibit 1
SURVEY RESULTS

"8-Blue" wing

Diary Number	Nurse Type	Direct Patient Care	Non-Nursing Tasks	Indirect Patient Care	Nurse's Admin.
1-8B	RN	505	7.5	207.5	87.5
2-8B	RN	355	10	320	30
3-8B	RN	482.5	0	237.5	20
4-8B	RN	505	0	215	75
5-8B	RN	181	0	529	84
6-8B	RN	345	0	320	10
7-8B	RN	440	40	240	30
8-8B	RN	335	15	365	17.5
9-8B	RN	375	65	245	70
10-8B	RN	512.5	0	207.5	45
11-8B	RN	380	15	325	100
12-8B	RN	440	45	225	85
13-8B	RN	350	0	360	50
14-8B	RN	439.9	17.5	252.6	39.5
15-8B	RN	360	10	350	45
16-8B	RN	498	27	195	79.9
17-8B	RN	360	15	340	20
18-8B	RN	330	45	340	32.5
19-8B	RN	463.7	47.5	208.8	106.6
20-8B	RN	442.5	7.5	260	82.5
21-8B	RN	395	70	255	20
22-8B	RN	390	42.5	242.5	17.5
23-8B	RN	478.5	26.5	215	75
24-8B	RN	397.5	15	277.5	25
25-8B	RN	340	40	335	35
26-8B	RN	434	0	286	5
27-8B	RN	370	50	285	45
28-8B	RN	525	5	190	60
29-8B	RN	345	80	290	70
30-8B	RN	355	50	300	42.5
31-8B	RN	325	110	250	50
32-8B	RN	385.5	2.5	332	46.1
33-8B	RN	381	0	339	110
34-8B	RN	433	42.5	244.5	116
35-8B	RN	310	40	360	70
36-8B	RN	275	0	440	40
37-8B	NA	487.5	10	222.5	46.6
38-8B	NA	425	50	220	20
39-8B	NA	324	40	356	37
40-8B	NA	410	5	275	55
41-8B	NA	210	285	225	75
42-8B	NA	371.5	98.5	250	100
43-8B	NA	495	45	180	20
44-8B	NA	430	18	272	35.6
45-8B	NA	223.2	65	416.8	56.7
46-8B	NA	337.5	95	252.5	52.5
47-8B	NA	226	135	359	50
48-8B	NA	371	60	289	15.4
49-8B	NA	420	75	220	20

Exhibit 1 (continued)

"10-Gold" wing

Diary Number	Nurse Type	Direct Patient Care	Non-Nursing Tasks	Indirect Patient Care	Nurse's Admin.
1-10G	RN	334	8.5	377.5	22.5
2-10G	RN	275	65	380	40
3-10G	RN	373	59	258	83.4
4-10G	RN	552.5	0	162.5	20
5-10G	RN	416	45	259	34.4
6-10G	RN	508.5	18.5	193	41.5
7-10G	RN	577	60	53	15
8-10G	RN	425	72.5	197.5	57.5
9-10G	RN	350	41	329	49.1
10-10G	RN	367	25	328	15
11-10G	RN	420	5	295	60
12-10G	RN	419	30	256	42.5
13-10G	RN	555	10	140	72.5
14-10G	RN	357	80	258	32.1
15-10G	RN	385	40	295	50
16-10G	RN	488	35	182	65
17-10G	RN	440	51	229	52
18-10G	RN	390	7.5	302.5	17.5
19-10G	RN	438	45	237	49
20-10G	RN	362.5	40	302.5	40
21-10G	RN	460	14	246	30
22-10G	RN	423	40	257	57.5
23-10G	RN	543	7.5	169.5	17.9
24-10G	RN	446	35	239	59.1
25-10G	RN	480	56	184	25
26-10G	RN	415	20	285	10
27-10G	RN	317	56	307	7.5
28-10G	RN	345	5	370	115
29-10G	RN	395	20	305	45
30-10G	RN	394	56	260	35.2
31-10G	RN	475	39	206	57.9
32-10G	RN	408.7	14.7	291.6	94.3
33-10G	RN	400	75	225	27.5
34-10G	RN	445	20	255	75
35-10G	NA	414	63	243	20
36-10G	NA	379	56	275	4.1
37-10G	NA	565	50	85	5
38-10G	NA	323	37	360	18.8
39-10G	NA	440	70	205	10
40-10G	NA	415	50	250	62.5
41-10G	NA	425	43	252	12
42-10G	NA	429	56	220	22.5
43-10G	NA	400	17	303	19
44-10G	NA	315	215	185	35
45-10G	NA	422.3	133.7	139	14
46-10G	NA	485	95	130	5.1