Research Paper

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# An Exploratory Assessment of Productive ward in a JCI accredited Hospital

Hospital Management

**KEYWORDS :** Productive ward, health services, Well organized ward (WOW), Knowing what we are doing (KNOW).

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## ABSTRACT

*Purpose - The purpose of this paper is to identify and investigate the productive ward strength in connection by comparing the various wards in the hospital.*
*Design/methodology/approach – Simple random sampling is used for sample size of 60 patients and 25 employees of hospital.*
*Findings – The Cronbach's Alpha reliability for patient questionnaires and hospital staff questionnaires is calculated as 0.801 and 0.843 respectively. The operational efficiency is highest for IV B level which is of 85% ie; efficient ward in the hospital.*
*Research limitations – Although the study has a limited sample size, it help in identifying, measuring, analyzing and calculating the compliance with patient expectations. The study has raised a number of issues which would form the basis for useful further research.*
*Originality/value – The findings should be useful to hospital quality department to assess and improve service quality.*

**Introduction**

The Productive Ward programme has been exported internationally; however, a tentative assessment of the literature identified some differences in implementation and structure when compared with the process in the UK. As per (Waring & Bishop, 2010) provide an account of lean service redesign within UK healthcare services. The main aim of Hospital Management is to strive for decreasing the cost of treatment without compromising on the quality of treatment. Mazur, L., McCrery, J., and Rothenberg, L. (2012) the emphasis in health care is rapidly shifting from a model of low-cost provision to one that embraces low-cost, improvement and high quality. The Department of Health in UK has stipulated in its "Standards for Better Health" that we should ensure health care provided is both safe and of acceptable quality and that there should be a framework for continuous improvement (Department of Health (DOH), 2006). The cost effective high quality treatment resulted in new thinking and a new breed of leader for effective management of hospitals check list of various procedures. In complex activities outside and within medical practice checklists can be helpful in reducing errors (Gawande, 2009).

Releasing Time to Care: The Productive Ward programme was developed by the NHS Institute for Innovation and Improvement and launched in England in 2007 (NHS Institute for Innovation and Improvement (NHSI), 2007). The programme comprises 13 modules arranged in a structure known as 'The PW house'. The three foundation modules are implemented first Knowing How We Are Doing, Well Organised Ward and Patient Status at a Glance, followed by eight process modules that focus on fundamental aspects of nursing practice such as Medicines and Patient Hygiene (Stella Wright & Wilfred McSherry, 2013).


The "Productive ward" image is assessed on 5 March, 2014. Available at http://snapologue.blogspot.com/2009/02/how-nhs-can-never-find-anything.html

White, M., Wells, J.S., and Butterworth, T. (2013) explain in the case of The Productive Ward "involved leadership" of senior executive leaders and ward leaders has been identified as being an important facilitating factor in implementation. Morrow, E., Robert, G., Maben, J., and Griffiths, P. (2012) say that programme frames Lean in language and examples that are intended to appeal to health care staff and enable them to bring about changes at ward level which comprises 13 modules and tools designed for self-directed learning at ward level, beginning with three foundation modules called Knowing How We are Doing, Well-Organised Ward and Patient Status at a Glance; and further modules which focus on a range of ward processes including admissions, discharge and shift handovers.

**Materials and Methods**

Aim of research - The purpose of the study was to explore the most efficient ward by implementing the quality patient care in terms of spending more time with the patient and improving the environment as well as operating processes of the hospital without compromising on the patient safety and delivering the efficiency in patient experience of hospital. The name of the hospital is not disclosed as per the request from the hospital.

**Objectives of research** -

1. To identify and investigate the productive ward strength in connection by comparing the various wards in the hospital.
2. To evaluate the effectiveness of performance of the hospital in compliance with patient expectation.

Research design - Exploratory and descriptive study.
Sample design - Sampling unit - Hospital staff and patients in JCI accredited hospital
Sampling method - Simple random sampling ie; Convinence sampling.
Sample size – Sixty Patients and Twenty five employees of hospital.

| | | | | |
|---|---|---|---|---|
| Cronbach's Alpha | Part 1 N of Items | | Value | .708 |
| | | | 7[a] | |
| | Part 2 N of Items | | Value | .697 |
| | | | 6[b] | |
| | Total N of Items | | | 13 |
| Correlation Between Forms | | | | .670 |
| Spearman-Brown Coefficient | | Equal Length | | .803 |
| | Unequal Length | | .803 | |
| Guttman Split-Half Coefficient | | | | .801 |
| Part 1 – For 7 questions ie; Que1, Que10, Que11, Que12, Que13, Que2, Que3 are represented in table as 7[a] | | | | |
| Part 2 – For 6 questions ie; Que4, Que5, Que6, Que7, Que8, and Que9 are represented in table as 6[b] | | | | |

Scaling technique - The patient and staff questionnaire is calculated by Likert scale of highly dissatisfied as 1, dissatisfied as 2, neither Neither Satisfied nor Dissatisfied as 3, satisfied as 4 and highly satisfied as 5.

Data collection method - Primary data collection – Observation, Unstructured Interviews and Questionnaires. Secondary data collection - Hospital records/HR Policy, Annual reports.

Study Period – Two Months.

Data Analysis - By Microsoft Excel and SPSS

Limitations - The data collection is done in the following floors of the hospital

1. 3rd floor - A wing Platinum ward is represented here after as (III A)
2. 4th floor - tower A Labor ward is represented here after as (IV A)
3. 4th floor - tower B Private Ward is represented here after as (IV B)
4. 5th floor and 5th floor tower A Executive ward is represented here after as (V A)
5. 5th floor tower B Twin sharing ward is represented here after as (V B)
6. 6th floor tower B General Ward is represented here after as (VI B)

**Analysis**

Reliability test - In statistics refer to the consistency of measure. A measure has a high reliability if it produces consistent result under consistent condition. There are different options for checking of the reliability of questionnaire, for example the Guttman split hall method. For this method the forms where spitted in to two halves. This method shows the correlation scores on one half of test with score on the other half of the test. The correlation between both halves estimates the reliability of the questionnaire.

**Table 1: Reliability data analysis for patient questionnaire**

Que represents – Question number in the patient questionnaire

Table 1 reliability data analysis for patient questionnaire show the reliability of the questionnaire part 1 which include 7 questions and part 2 contain 6 questions at reliability of 69.7% and the correlation between the two forms amounts to 67%. The reliability data analysis for patient questionnaire through Guttman Split half coefficient is 80.1% ie; 0.801 which is highly reliable.

| CAT | | N | 1 | 2 | 3 | 4 | 5 | % of Dissatisfaction | % of satisfaction |
|---|---|---|---|---|---|---|---|---|---|
| M | PS | 60 | 0 | 0 | 0 | 32 | 28 | 0% | 100% |
| | TQF | 60 | 0 | 8 | 1 | 31 | 20 | 15% | 85% |
| | DE | 60 | 0 | 2 | 1 | 44 | 13 | 5% | 95% |
| HK | WC | 60 | 3 | 8 | 1 | 35 | 13 | 20% | 80% |
| SB | NB | 60 | 0 | 1 | 0 | 37 | 22 | 2% | 98% |
| | DC | 60 | 0 | 0 | 0 | 32 | 28 | 0% | 100% |
| | DCE | 60 | 0 | 2 | 2 | 30 | 26 | 7% | 93% |
| WR | PR | 60 | 0 | 4 | 2 | 33 | 21 | 10% | 90% |
| A & D | DI | 60 | 2 | 6 | 3 | 36 | 13 | 18% | 82% |
| | RA | 60 | 3 | 2 | 2 | 39 | 14 | 12% | 88% |
| | TA | 60 | 2 | 2 | 2 | 36 | 18 | 10% | 90% |
| F | RB | 60 | 1 | 7 | 6 | 32 | 14 | 23% | 77% |
| | ET | 60 | 1 | 0 | 0 | 36 | 23 | 2% | 98% |

**Table 2: Reliability data analysis for staff questionnaire**

| | | | | |
|---|---|---|---|---|
| Cronbach's Alpha | Part 1 N of Items | | Value | .757 |
| | | | 9[a] | |
| | Part 2 N of Items | | Value | .641 |
| | | | 9[b] | |
| | Total N of Items | | | 18 |
| Correlation Between Forms | | | | .742 |
| Spearman-Brown Coefficient | | Equal Length | | .852 |
| | Unequal Length | | .852 | |
| Guttman Split-Half Coefficient | | | | .843 |
| Part 1 – For 9 questions ie; The items are: Que1, Que10, Que11, Que12, Que13, Que14, Que15, Que16, Que17 are represented in table as 9[a] | | | | |
| Part 2 – For 9 questions ie; The items are: Que18, Que2, Que3, Que4, Que5, Que6, Que7, Que8, Que9 are represented in table as 9[b] | | | | |

Que represents – Question number in the patient questionnaire

Table 2 reliability data analysis for staff questionnaire show the reliability of the questionnaire part 1 which include 9 questions and part 2 contain 9 questions at reliability of 64.1% and the correlation between the two forms amounts to 74.2%. The reliability data analysis for staff questionnaire through Guttman Split half coefficient is 84.3% ie; 0.843 which is highly reliable.

**Calculation**

The below table summarize patients experience in the hospital based on the categories such as meals, housekeeping, staff behavior, ward rounds, admission and discharge process and facilities in the hospital.

**Table 3: Descriptive analysis of Patient questionnaire**

CAT - Category
M – Meals
HK – House Keeping
SB – Staff Behavior
WR – Ward Rounds
A & D – Admission and Discharge
F – Facilities
PS - Service of pantry
TQF - Taste and Quality of food
DE - Explanation by the dietician
WC - Cleanliness of ward
NB - Behavior of nursing staff
DC - Courtesy of the doctors
DCE - Explanation about disease condition
PR - Awareness about the progress of patient to relatives
DI - Information about the date of discharge
RA - Regarding the admission procedure
TA - Time for admission procedure
RB - Regarding the billing process
ET - Explanation about treatment procedure

**Table 4: Mean and Standard deviation calculation of Patients questionnaire**

| CAT | | N | 1 | 2 | 3 | 4 | 5 | % Dissatisfaction | % satisfaction |
|---|---|---|---|---|---|---|---|---|---|
| NP | EP | 25 | 0 | 0 | 2 | 8 | 15 | 8% | 92% |
| | DRS | 25 | 1 | 1 | 5 | 9 | 9 | 28% | 72% |
| | ARR | 25 | 8 | 7 | 3 | 5 | 2 | 72% | 28% |
| PO | TPO | 25 | 2 | 3 | 3 | 7 | 10 | 51% | 49% |
| | RR | 25 | 1 | 1 | 2 | 8 | 13 | 16% | 84% |
| | MDR | 25 | 1 | 3 | 12 | 5 | 4 | 64% | 36% |
| WR | PWR | 25 | 2 | 1 | 1 | 6 | 15 | 16% | 84% |
| | PP | 25 | 1 | 2 | 2 | 12 | 8 | 20% | 80% |
| MR | PM | 25 | 1 | 4 | 14 | 5 | 1 | 76% | 24% |
| | ME | 25 | 2 | 1 | 3 | 10 | 9 | 24% | 76% |
| | SOP | 25 | 6 | 9 | 7 | 2 | 1 | 88% | 12% |
| WOW | SL | 25 | 2 | 3 | 0 | 8 | 12 | 20% | 80% |
| | MQS | 25 | 1 | 1 | 1 | 5 | 17 | 12% | 88% |
| KNOW | PC | 25 | 3 | 3 | 0 | 7 | 12 | 24% | 76% |
| | AS | 25 | 6 | 9 | 9 | 0 | 1 | 96% | 4% |
| SH | ECH | 25 | 5 | 4 | 0 | 12 | 4 | 36% | 64% |
| | TWS | 25 | 9 | 8 | 0 | 5 | 3 | 68% | 32% |
| | FCL | 25 | 1 | 1 | 2 | 10 | 11 | 16% | 84% |

| Descriptive Statistics for Patients questionnaire | | | | | |
|---|---|---|---|---|---|
| | N | Min. | Max. | Mean | SD |
| Q1 | 60 | 4 | 5 | 3.47 | .503 |
| Q10 | 60 | 1 | 5 | 3.07 | .710 |
| Q11 | 60 | 1 | 5 | 3.17 | .693 |
| Q12 | 60 | 1 | 5 | 2.98 | .725 |
| Q13 | 60 | 1 | 5 | 3.35 | .577 |
| Q2 | 60 | 2 | 5 | 3.18 | .676 |
| Q3 | 60 | 2 | 5 | 3.17 | .493 |
| Q4 | 60 | 1 | 5 | 2.97 | .758 |
| Q5 | 60 | 2 | 5 | 3.35 | .515 |
| Q6 | 60 | 3 | 5 | 3.47 | .503 |
| Q7 | 60 | 2 | 5 | 3.37 | .610 |
| Q8 | 60 | 2 | 5 | 3.25 | .628 |
| Q9 | 60 | 1 | 5 | 3.00 | .713 |
| Valid N (list wise) | 60 | | | | |

Q – Question
Min. – Minimum
Max. – Maximum
SD – Standard Deviation

As per table 3 descriptive analysis of patient questionnaire and table 4 mean and standard deviation calculation of patient's questionnaire, the patients are not satisfied with the billing process of hospital which constitutes 23.33% of mean value 2.98 and regarding the cleanliness of ward which constitute 20% of mean value 2.97of categories admission and discharge process and Housekeeping respectively.

**Table 5: Descriptive statistics of staff questionnaire**

CAT – Category
NP – Nursing procedure
PO – Patient observation
WR – Ward round
MR – Medication round
WOW – Well organized ward
KNOW - Knowing what we are doing
SH – Shift handover
EP - Equipment is in the right place
DRS - Clearly defined roles for staff
ARR - Auditing report and result
TPO - Time spent for patient observation
RR - Clearly defined roles during patient rounds

MDR - Procedure is available for seeing patient when he miss during the doctors rounds.

| | PM1 | PM2 | PM3 | PM4 | PM5 | PM6 | SM1 | SM2 | SM6 | SM7 | SM3 | SM4 | SM5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PM1 | 1 | .4** | .5** | .5** | .3** | .4** | 0.0 | -0.0 | -0.0 | 0.2 | -0.2 | -0.0 | 0.0 |
| PM2 | .4** | 1 | .3** | .3* | 0.2 | .4** | 0.0 | -0.12 | -0.13 | 0.1 | -0.1 | -0.1 | -0.0 |
| PM3 | .5** | .3** | 1 | .3** | .3* | .4** | -0.0 | -0.1 | -0.1 | .2* | -0.1 | -0.0 | 0.0 |
| PM4 | .5** | .3* | .3** | 1 | .3** | .5** | 0.0 | -0.2 | 0.0 | 0.2 | -0.0 | -0 | 0.0 |
| PM5 | .3** | 0.2 | .3* | .3** | 1 | .5** | -0.0 | -.2* | -0.0 | 0 | -0.1 | -0.1 | -0.1 |
| PM6 | .4** | .4** | .4** | .5** | .5** | 1 | 0.0 | -0.0 | -0. | 0.1 | -0.0 | -0.0 | 0.1 |
| SM1 | 0.0 | 0.0 | -0.0 | 0.0 | -0.0 | 0.0 | 1 | .4** | .3* | 0.1 | .3* | .3* | .4** |
| SM2 | -0.0 | -0.1 | -0.1 | -0.2 | -.2* | -0.0 | .4** | 1 | .3** | .3* | .5** | .5** | .4** |
| SM6 | -0.0 | -0.1 | -0.1 | 0.0 | -0.0 | -0.1 | .3* | .3** | 1 | 0.0 | .3** | .7** | .5** |
| SM7 | 0.2 | 0.1 | .2* | 0.2 | 0 | 0.1 | 0.1 | .3* | 0.0 | 1 | -0.0 | 0.1 | 0.1 |
| SM3 | -0.2 | -0.1 | -0.1 | -0.0 | -0.1 | -0.0 | .3* | .5** | .3** | -0.0 | 1 | .4** | .4** |
| SM4 | -0.0 | -0.1 | -0.0 | -0 | -0.1 | -0.0 | .3* | .5** | .7** | 0.1 | .4** | 1 | .5** |
| SM5 | 0.0 | -0.0 | 0.0 | 0.0 | -0.1 | 0.1 | .4** | .4** | .5** | 0.1 | .4** | .5** | 1 |

PWR - Purpose of ward round is clear and specified to all
PP - Discussion of patient problems during ward rounds
PM - Responsible person for medication is clearly defined
ME - Clearly defined steps to avoid medication errors
SOP - Random audits conducted every month as per standard operating procedures
SL - Specific location for each item is clearly marked
MQS - Matching the quantity of stock availability and demand
PC - Procedure to update each chart with a set frequency and person responsible
AS - Actions are quickly sorted out
ECH - Effectiveness of clinical handover
TWS - Time waste for handing over the shift
FCL - Format for clinical handover.

As per Table 5 descriptive statistics of staff questionnaire, the staff are highly dissatisfied with the result of the Auditing which constitute 72%, responsible person for medication distribution which constitute 76%, random auditing conduction every month which constitute 88% and solutions for the staff problems are not sorted out quickly which constitute for 96% of categories Nursing procedure, Medication round and knowing what we are doing (KNOW) respectively. The staff is dissatisfied with categories of patient observations and shift hand over which constitute 64% and 68% respectively.

**Table 6: Correlations between patient and staff module**
** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

**Table 6: Correlations between patient and staff module**
PM – Patient Module
SM – Staff Module

**Patient modules**
PM 1 - related to meals.
PM 2 - related to housekeeping.
PM 3 - related to behavior of doctor and nursing staff.
PM 4 - related to word round of doctor.
PM 5 - related to admission and discharge process.
PM 6 - related to facility provided by hospital like billing.

**Staff modules**
SM 1 - related to Nursing procedure
SM 2 - related to Patient observation by nurse.
SM 3 - related to Ward round.
SM 4 - related to Medication round.
SM 5 - related to Well Organized Ward.
SM 6 - related to Knowing what we are doing.
SM 7 - related to Shift handover by nurses

As per the table 6 correlations between patient and staff module, the correlation between patient and staff module there is only one single relationship between Patient module 3 (behavior of Doctors and Nursing staff) and Staff module 7 (shift handover by nurses). The correlation between the two modules is 27.6% which is significant at 0.05 level which indicates that if shift handover by nurse is effective then it will affect the early completion work for the doctors which in turn will affect the behavior of doctor and nursing staff.

**Table 7: Correlation between productive ward module/category**
** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
C - Category

**Table 7: Correlation between productive ward module/category**

| | C1 | C10 | C11 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C1 | 1 | -0.0 | 0.0 | .4** | .8** | .344* | .4** | .3* | 0.1 | 0.0 | 0.0 |
| C10 | -0.0 | 1 | .7** | -0.1 | -0.0 | -0.09 | 0.0 | -0.1 | .2* | .5** | .3** |
| C11 | 0.0 | .7** | 1 | -0.1 | -0.0 | -0.12 | 0.0 | -0.1 | 0.2 | .5** | .9** |
| C2 | .4** | -0.1 | -0.1 | 1 | .8** | .533** | .4** | .3** | .3* | -0.0 | -0.1 |
| C3 | .8** | -0.0 | -0.0 | .8** | 1 | .527** | .5** | .3** | 0.2 | -0.0 | -0.0 |
| C4 | .3* | -0.0 | -0.1 | .5** | .5** | 1 | .5** | .7** | 0.1 | -0.0 | -0.1 |
| C5 | .4** | 0.0 | 0.0 | .4** | .5** | .571** | 1 | .5** | 0.1 | 0.0 | -0.0 |
| C6 | .3* | -0.1 | -0.1 | .3** | .3** | .745** | .5** | 1 | 0.0 | -0.0 | -0.1 |
| C7 | 0.1 | .2* | 0.2 | .3* | 0.2 | 0.101 | 0.1 | 0.0 | 1 | 0.2 | 0.1 |
| C8 | 0.0 | .5** | .5** | -0.0 | -0.0 | -0.055 | 0.0 | -0.0 | 0.2 | 1 | .4** |
| C9 | 0.0 | .3** | .9** | -0.1 | -0.0 | -0.106 | -0.0 | -0.1 | 0.1 | .4** | 1 |

In the table 7 correlation between productive ward module/category, the blue color represents the correlation less than 0.5, the orange color represents correlation between 0.5 to 0.75 and green color represents correlation more than 0.75

**Productive ward categories**
C 1 Nurse Procedure
C 2 Patient observations
C 3 Ward round
C 4 Medications round
C 5 WOWS
C 6 KNOW
C 7 Shift handover
C 8 Meals
C 9 House keeping
C 10 Behavior
C 11 Admission, discharge & billing

As per the table 7 correlation between productive ward module/category, there is significant relationship between admission billing and behavior of staff which comprise of 70.6% at 0.01 level of significance which in turn affect the admissions, discharge and billing process up to 76%.

**Table 8: Operational efficiency of individual ward**

| Ward | Level | Occupancy | ALOS | %Dissatisfied | % Satisfied |
|---|---|---|---|---|---|
| PW | III A | 35 | 3.74 | 1.75 % | 98.25 % |
| LW | IV A | 66 | 3.14 | 13.42 % | 86.58 % |
| PRW | IV B | 85 | 3.27 | 15.32 % | 84.66 % |
| ER | V A | 67 | 3.87 | 6.83 % | 93.17 % |
| TSW | V B | 79.5 | 4.46 | 10.17 % | 89.83 % |
| GW | VI B | 84.5 | 5.72 | 18.33 % | 81.67 % |

PW – Platinum ward
LW – Labour ward
PRW – Private ward
ER – Executive ward
TWS – Twin sharing ward
GW – General ward
ALOS – Average length of stay

As per table 8 operational efficiency of individual ward, the occupancy level high in VI B level (General ward) is high whereas average length of stay is also high compared to other wards.

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High rate of occupancy and low average length of stay is beneficial for hospital as well as the patient. The operational efficiency is highest for IV B level (Private ward) in which the occupancy level is highest and length of stay is minimum and the level of satisfaction is approximately 85% which make this ward the most efficient ward in the hospital.

**Findings and Discussion**

1. In the findings, it is observed that Category 3 shows positive relationship with category 2 which compromise 86.5% and with category 1 it shows relationship of 82%. Both category 1 and 2 show correlation up to 42% at 0.01 level of significance. This conclude that if ward rounds are effective by the concerned staff then it will affect the effectiveness of nursing procedure at 82% and patient observation at 86.5%. In turn, as the nursing procedure is effective it affected patient observation by 42%.

2. Category 2 affects the category 3,4,5,6 at 86%, 53%, 44%, 35, 31% respectively. This conclude that if more attention is to be given to the patient observation then ward rounds affected by 86.5%, medication round improve by 53%, well organized ward improved by 44%, knowing what we are doing improved by 35%, and most importantly nursing handover time improved by 31%.

3. Efficiency of nursing procedure affect the patient observation by 42%, ward rounds by 82%, medication rounds by 34%, WOW by 41% and KNOW by 30% but noticeable thing is that it is not affecting the nursing hand over category.

4. Category 10 show relationships with category 7, 8, 9, 11 which conclude that good behavior improve the shift hand over up to 27%, meals round upto 52% and housekeeping by 37%. Admission and discharge category affects the housekeeping by 53% and meal rounds by 90%.

5. Another case show that the improvement in the ward round also improve the medication round by 52%, WOW by 50%, KNOW by 38% which conclude that effective ward rounds help the staff to acquire more knowledge related to ward and the patient.

6. The rate of service and punctuality by the pantry service is good in all the wards but about 15 % are dissatisfied with taste of food mainly by the patients of V B ward. Around 95% of patients are satisfied with dietician rounds and her suggestions.

7. In terms of hygiene and cleanliness, 25% of patients are dissatisfied which is the priority important area to improve.

8. About 18.3% of patients are dissatisfied because of communication gap and lack of answering the queries by the doctor to the patient and his relatives during the treatment and even at the time of discharge.

9. All the in patients are satisfied with the treatment provided by the hospital.

**Suggestions**

Doctor's availability should be displayed at the registration desk. All doctors should given orientation about the quality care guide lines, policies, procedures, rules, and regulations of the hospital. As the bed occupancy in certain wards is 100%, the hospital administration can decide on increasing the Inpatient beds or effective management of discharge process can help in the efficiently management of beds availability. The patient attendant should be given daily updates of his bill amount and changes in the treatment plan if any.

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