# Will a short stay unit improve quality of care: a 1-year review study of the most equipped SSU in Saudi Arabia?

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**ABSTRACT**

**Background:** A 1 year study of the only short stay unit SSU in the kingdom of Saudi Arabia to have medicine, cardiology, cardiac bed monitoring and pediatric. SSU is a ward that was created to deliver care of patients and accelerate their discharge to improve hospital bed efficiency, increase bed turn-over and increase patient's satisfaction and reduce the health care system costs and hospital acquired infections.

**Objectives:** To know the association of different diseases and delayed discharges to improve bed efficiency and decrease the length of stay and costs.

**Design:** Retrospective observational cohort

**Settings:** King Khaled University Medical City (KSUMSC)

**Materials & Methods:** A retrospective analysis involving data of all patients admitted to the King Khaled University hospital SSU during October 2016 – September 2017. Data were classified into two groups patients discharged within 72 hours or after.

**Main Outcome Measures:** Length of stay and the association between different diseases with increased length of stay.

**Sample Size:** Sample size was 385 patients at a95% confidence interval with 5% precision using the formula $n=z^2P(1-P)/d^2$. However all patients admitted to the unit were included.

**Results:** A total of 633 patients were included with a significantly lower mean age difference for patients discharged after 72hours. Some of the diseases were considered as risk factors for delayed discharges like heart failure, ACS and DKA. However, none of the subspecialties caring for patients carried a risk of prolonged stay.

**Conclusions:** SSU improves bed turnover, efficiency and decreased the length of stay of a known diseases to cause prolonged stay.

**Limitations:** The study did not compare between patients admitted in a general ward and short stay unit with the same disease at the same time..

**Keywords:** NIL.

## INTRODUCTION

This is a 1 year study of the only short stay unit SSU in the kingdom of Saudi Arabia to have medicine, cardiology, cardiac bed monitoring unlike many SSUs which only accommodate certain diseases. SSU is a ward that was created to deliver care of targeted patients requiring brief hospitalization and then either discharge them or transfer them to an ordinary ward in case where prolonged care needed.[1] It was found to decrease emergency department crowding and improve patient's flow which increases the efficiency of care and patient satisfaction.[1,2,3] thus, it can improve the efficiency of hospital beds without compromising patient care,[2,3] Data shows that SSU can also decrease the length of stay to

AHF,[4] Which is found to be the most common cause of admition to SSU,[5] without altering their post discharge status but at the expense of a higher rate of admitions,[6] this reduction in length of stay reduces costs and hospital acquired infections,[7,8,9,10] however, comparisons of the same disease in SSU and an ordinary ward weren't done this limit the evidence of outcome in SSU compared to a general ward.[11]

## Materials and Methods

This is a retrospective observational study involving all patients who were admitted to the SSU following the creation of the unit during October 2016 – September 2017; our SSU have equal bed distribution

between medicine and cardiology with 6 beds each, 2 of them are cardiac bed monitoring (**Figure2**). Sample size was calculated to be 385 patients at a 95% confidence interval with 5% precision using the formula n=z2P(1-P)/d2. However data of 633 was collected to include all patients admitted to the unit.

Data of patients' demographics, underlying disease as well as dates of admission and discharges were extracted from medical records and then were divided into two groups (patients discharged within 72 hours and patients discharged after 72 hours) to know the association of different diseases and delayed discharges

Analysis was done using Statistical Package for the Social Sciences (SPSS) version 22.0 software to calculate the demographics and length of stay. Categorical data were expressed as frequency and percentage. Continuous data were summarized using mean and standard deviation (SD), Chi-square and student T test was used to compare the variables in the two groups of patients those discharged within 72 hours or after. We assumed a statistically significant result when P value was less than 0.05.

## Results

633 patients were included in the 1 year study, 371 (58.8%) of them were males, with a significant lower mean age difference for patients discharged after 72 hours P<0.026 (**Table2**). increasingly the occupancy rate was 42.6% with an average length of stay of 2.82 days (**Table1**) in which 444 (70.1%) were discharged within 72 hours and 189 (29.9%) discharged after 72 hours (**Table2**), less than half required a transferre to the floor after 72 hours (**Figure1**). Heart failure and acute coronary syndrome (ACS) were the most frequent diseases admitted to the unit 99 (15.64%) each, of all diseases; Heart failure, ACS and DKA was associated with prolonged hospital stay P<0.0001, P<0.012 and P<0.024 respectively. None of the subspecialties involved in patient's care had an influence in delaying discharges of one or more of the diseases (**Table2**).

## Discussion

Our mean length of stay in the SSU was 2.82 days which is meeting the objective of the unit as length of stay is the main factor reflecting the improved quality of care, as our SSU was created to serve a large number of patients with different ages and co-

morbidities unlike other SSU which only accommodate specific diseases this can only be done by reducing the length of stay and improving the quality of care, it was also in the same range of length of stay with other SSUs.[12,13,14]

Heart failure in our study was a risk of prolonged hospital stay >72 hours but was much less in length of stay compared to heart failure admitted to general wards in.[15,16,17,18,19] Other SSU also reported a shorter length of stay to heart failure cases by 2 days compared a general ward and was found to decrease emergency department revisits by 10% by improving the management of acute heart failure. And improving the 30 days mortality rate as it lead to a safer decision making by either (admit to a general ward, admit to SSU or discharge) rather than just (admit or discharge).[6]

Most of the delayed discharges in our MSSU were due to either the need of more investigations or prolonged management. some studies show a difference in the length of stay which is much lower in the short stay than that of a general ward but at the expense of a higher readmition rate,[6,20] while other studies showed a lower readmition rates compared to inpatients.[21] moreover, SSU results in a lower costs for both hospitals and health care systems.

Due to the efficacy observed with our SSU, it was expanded even more at the end of the research to include 3 beds for pediatrics and 3 beds for respiratory (**Figure3**).

## Conclusion

SSU is a good choice for hospitals looking for improved bed efficiency a large reduction of hospital stay of known diseases to cause prolonged stay and decreased ER crowding.

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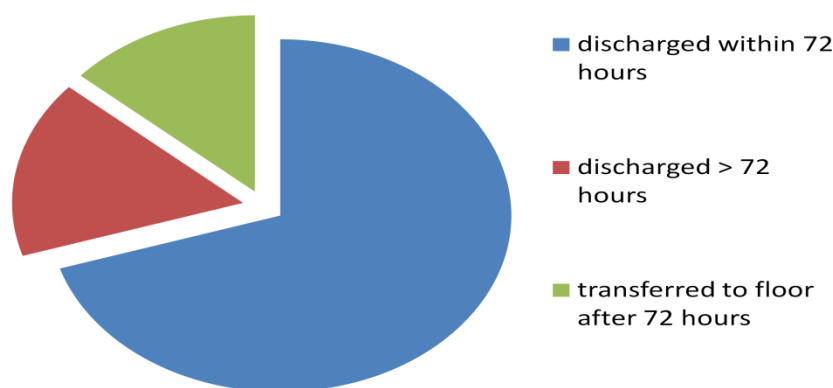
## Figure1: time of discharge



- discharged within 72 hours
- discharged > 72 hours
- transferred to floor after 72 hours

## Figure 2: bed distribution before research



- cardiology
- cardiac monitor
- medicine
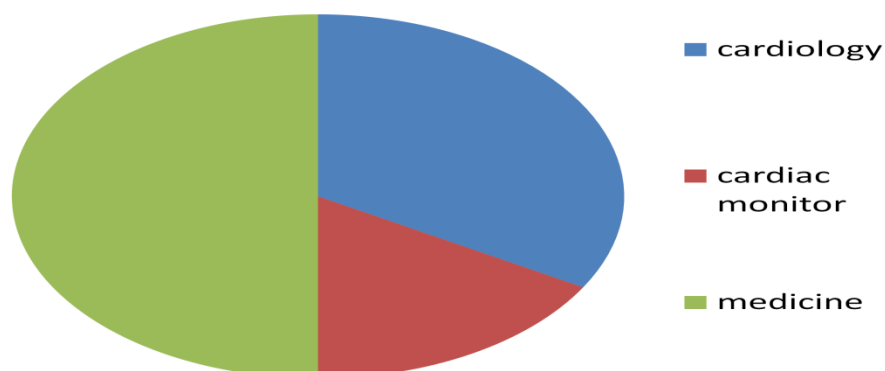
## Figure 3: bed distribution after research



- cardiology
- cardiac monitor
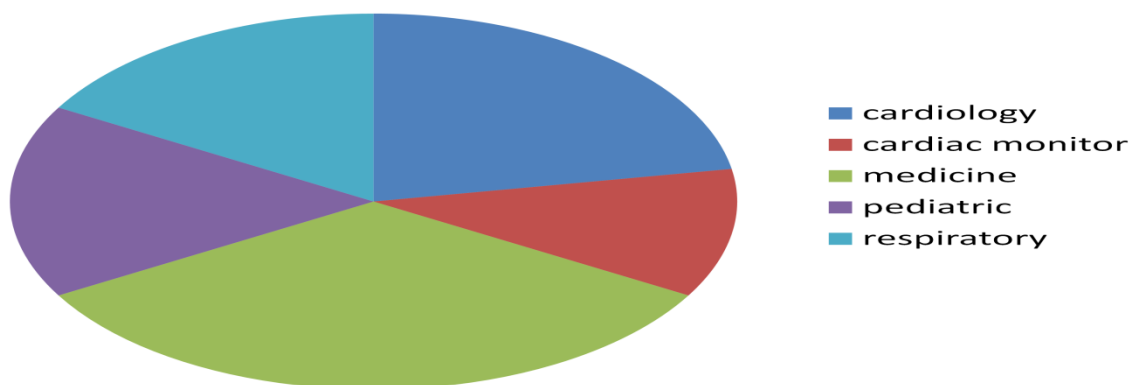- medicine
- pediatric
- respiratory

Table 1: general statistic of short stay unit

| Admitions / day | mean length of stay | Number of beds at time of research | Number of beds after research | Occupancy rate |
|---|---|---|---|---|
| 1.74 | 2.82 days | 12 | 18 | 0.426 |

### Table 2: comparison of patients discharged within 72 hours or after

| | D/C < 72 hours (n=444) | D/C > 72 hours (n=189) | P value |
|---|---|---|---|
| **Gender** | | | |
| **Male** | 267 (71.8%) | 105 (28.2%) | 0.285 |
| **Female** | 177 (67.8%) | 84 (32.2%) | |
| **age** | 53.05 ± 20.06 | 49 ± 21.15 | <0.026 |
| **Service** | | | |
| **CTU** | 197 (73.2%) | 72 (26.8%) | 0.144 |
| **Cardiology** | 165 (66.8%) | 82 (33.2%) | 0.142 |
| **Gastroenterology** | 29 (65.9%) | 15 (34.1%) | 0.525 |
| **Pulmonary** | 7 (87.5%) | 1 (12.5%) | 0.447 |
| **Neurology** | 35 (71.4%) | 14 (28.6%) | 0.838 |
| **Nephrology** | 9 (75%) | 3 (25%) | 1 |
| **Rheumatology** | 2 (100%) | 0 | 1 |
| **Oncology** | 0 | 1 (100%) | 0.299 |
| **pediatric** | 0 | 1 (100%) | 0.299 |
| **Diagnosis** | | | |
| **Heat failure** | 49 (49.5%) | 50 (50.5%) | <0.0001 |
| **ACS** | 80 (80.8%) | 19 (19.2%) | <0.012 |
| **DKA** | 39 (84.8%) | 7 (15.2%) | <0.024 |
| **SCA** | 31 (58.5%) | 22 (41.5%) | 0.053 |
| **GI bleed** | 20 (80%) | 5 (20%) | 0.272 |
| **Asthma exacerbation** | 18 (85.7%) | 3 (14.3%) | 0.113 |
| **Electrolyte abnormality** | 12 (63.2%) | 7 (36.8%) | 0.499 |
| **Stroke** | 11 (64.7%) | 6 (35.3%) | 0.62 |
| **AKI** | 9 (56.3%) | 7 (43.8%) | 0.219 |

| | | | |
|---|---|---|---|
| **Pneumonia** | 9  (56.3%) | 7  (43.8%) | 0.219 |
| **others** | 166  (74.77%) | 56  (25.23%) | - |

CTU: general medicine. ACS: acute coronary syndrome.  DKA: diabetic ketoacidosis.   SCA: sickle cell anemia.   GI: gastrointestinal.  AKI: acute kidney injury.  D/C: discharge