Evaluation of a Flexible Acute Admission Unit: Effects on Transfers to Other Hospitals and Patient Throughput Times

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Introduction: To prevent overcrowding of the emergency department, a flexible acute admission unit (FAAU) was created, consisting of 15 inpatient regular beds located in different departments. We expected the FAAU to result in fewer transfers to other hospitals and in a lower length of stay (LOS) of patients needing hospital admission.

Methods: A before-and-after interventional study was performed in a level 1 trauma center in the Netherlands. Number of transfers and LOS of admitted ED patients in a 4-month period in 2008 (control period) and a 4-month period in 2009 (intervention period) were analyzed.

Results: Of 1,619 regular admission patients, 768 were admitted in the control period and 851 in the intervention period. The number of transfers decreased from 80 (10.42%) to 54 (6.35%) ($P = .0037$). The mean ED LOS of both the non-admitted patients and the admitted patients needing special care significantly increased (105 minutes vs 117 minutes [$P = .022$] and 176 minutes vs 191 minutes [$P < .001$], respectively). However, the mean LOS of FAAU-admissible patients was unaltered (226 minutes vs 225 minutes, $P = .865$).

Conclusions: The FAAU reduced the number of transfers of admitted patients to other hospitals. The increase in LOS for special care patients and non-admitted patients was not observed for regular, FAAU-admissible patients. Flexible bed management might be useful in preventing overcrowding.

Key words: Crowding; Patient admission; Length of stay; Emergency service; Hospital

Emergency department overcrowding (EDO) because of constraints in capacity is associated with decreased patient safety, increased 10-day inpatient mortality rates, long patient waits, and ambulance diversion.[1-3] Ambulance diversion may result in increased mortality rates.[4] Empirical evidence confirms that a lack of ready and available admitting beds contributes to the problem of EDO.[4-6] Although there are multiple causes of EDO, inadequate inpatient capacity seems to be the main cause.[7-9] The inability to move admitted patients from the emergency department to an inpatient bed forces the emergency department to board these patients until inpatient beds are available. Boarding leads to delays in the care of new patients.[10,11]

Schneider et al[12] concluded that rapidly transferring admitted patients from the emergency department to a hospital bed had the single greatest impact in alleviating ED crowding. Computer simulation modeling by Khare et al[13] subscribed to this conclusion.

Our hospital has a "no diversion" policy, accepting all incoming patients. Since 2006, we have had difficulty in obtaining inpatient beds for ED patients. Crowding of the ED patient treatment area and transfers to other hospitals for patients needing admission were common. This occurred despite submaximal hospital occupancy, mainly because specialists were reluctant to admit patients from other specialties on "their beds." For example, a patient with rectal carcinoma had to wait in the emergency department until transfer to another hospital, despite enough available beds on other, non-oncology wards.

Dutch emergency departments are not experiencing overcrowding yet, but crowded conditions and ED throughput times are steadily increasing, including in our center. To

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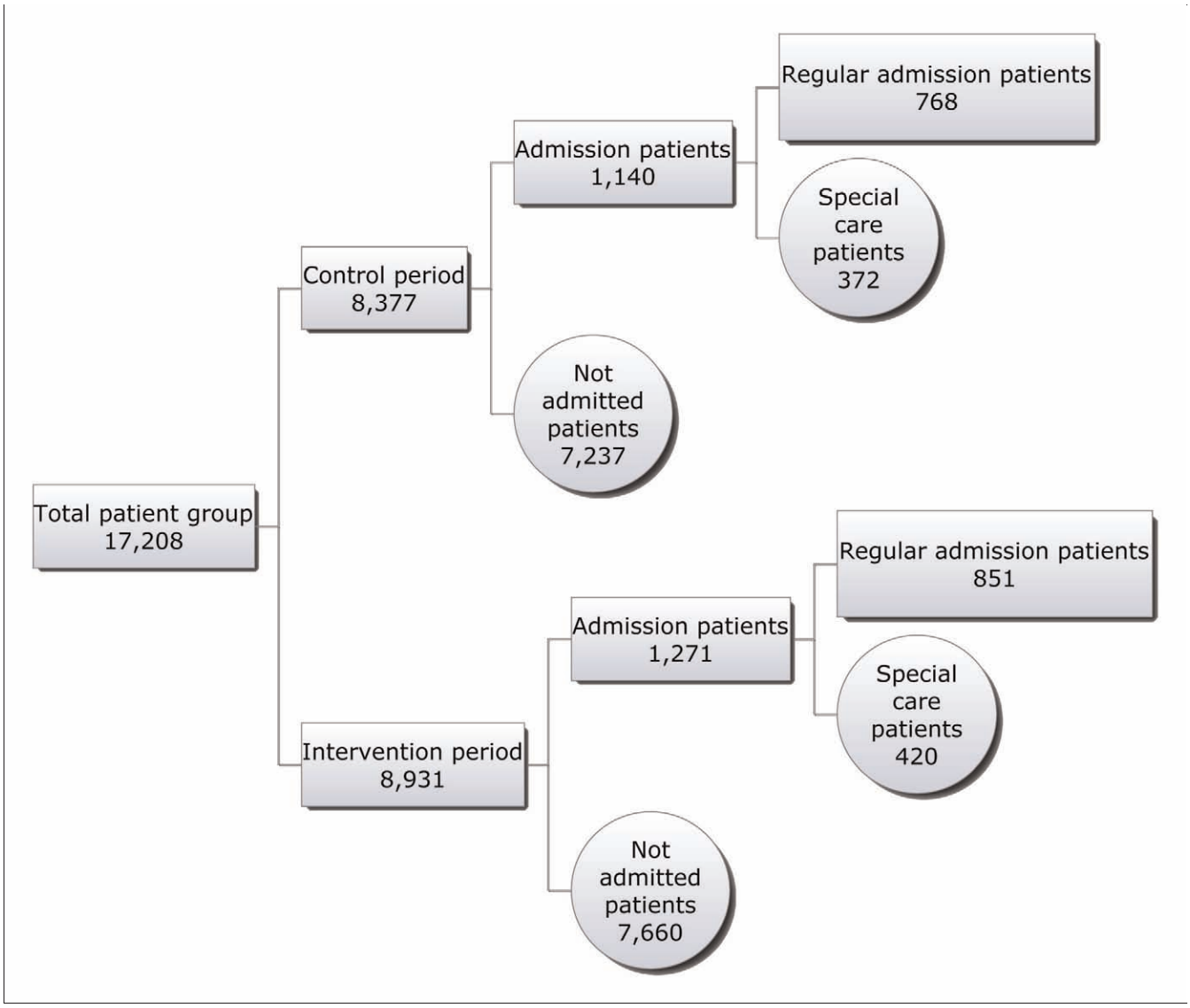

FIGURE 1
Patient flow scheme.

prevent this trend from continuing, we started using flexible bed management and created a flexible acute admission unit (FAAU). At least 15 potential FAAU beds divided over several departments were identified on a daily basis. The empty beds on every floor were changed into "FAAU" beds from 4 PM until 8 AM the next day. During office hours, if necessary, emergency admissions were transferred from the FAAU beds to the departments where they belonged.

With this study, we tested the hypothesis that flexible bed management would lead to fewer transfers to other hospitals and to a lower length of stay (LOS) for ED patients needing hospital admission.

Methods

STUDY DESIGN

We performed a before-and-after interventional study in an inner-city, level 1 trauma center in the Netherlands with approximately 50,000 patient visits per year. We analyzed all patients registered during off hours at our emergency department during a 4-month period in 2008 (control per-